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ABSTRACT

"The Long-Range Plan for Technology" was adopted by the Texas State Board of Education in November 1988. This progress report details accomplishments through August 1992 in the following categories: (1) hardware procurement and purchase; (2) courseware adoption and provision; (3) training and certification; (4) delivery systems; and (5) research and development. The technologies encompassed are computer-based systems, information storage and retrieval devices, telecommunications, and other electronic media. Priority uses are for classroom instruction, instructional management, distance learning, and communications. Enabling statutes for the long-range plan have been passed, and many implementation plans have been approved. An Advisory Committee on Technology Standards and the Texas Center for Educational Technology have been established, and the first electronic textbook was adopted in November 1990. Technology studies have been started at pilot project sites and the Texas Education Network is operating as an electronic transfer system. Phase 1, now completed, has set the stage for technology use in Texas education. Appendix A is an index to proposed actions, and Appendix B lists the current status of statewide technology initiatives. (SLD)

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PROGRESS REPORT ON THE LONG-RANGE PLAN FOR TECHNOLOGY

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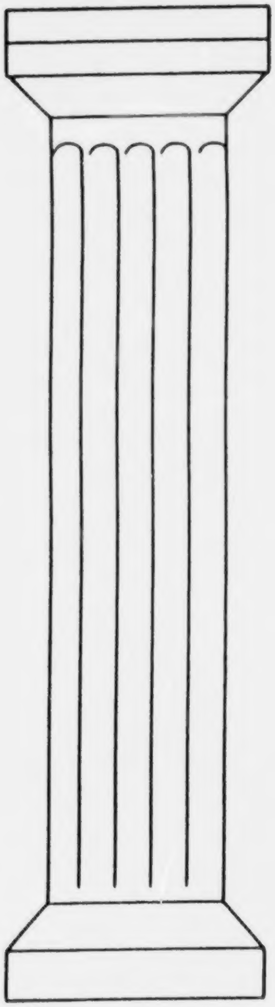

PROGRESS REPORT ON THE LONG-RANGE PLAN FOR TECHNOLOGY

A REPORT
FROM THE STATE BOARD OF EDUCATION

Submitted to the Governor, Lieutenant Governor, Speaker, and the Seventy-Third Texas Legislature

Texas Education Agency
Austin, Texas

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April 1993

The Honorable Ann W. Richards, Governor of Texas
The Honorable Bob Bullock, Lieutenant Governor of Texas
The Honorable Pete Laney, Speaker of the House
Members of the 73rd Texas Legislature

Section 14.021 of the Texas Education Code directs the State Board of Education to develop a long-range plan for technology. This plan was adopted by the board in November 1988. The measure further required the board biennially to report to the governor and the legislature on the implementation of the plan. The first *Progress Report on The Long-Range Plan for Technology* was approved by the State Board of Education in April 1991.

The second *Progress Report on The Long-Range Plan for Technology* documents the proposed actions and accomplishments during Phase I: 1988-1992. These actions and accomplishments focused on the implementation aspects of the plan.

To the best of our knowledge, this is the most comprehensive technology plan in the country. It addresses statewide initiatives, local funding, and the establishment of Technology Preview Centers at the regional education service centers for providing training and support for the school districts. These actions, like many others described in the report, have received national recognition for providing equitable technology resources to teachers and students in the State of Texas.

The State Board of Education hereby submits this second *Progress Report on The Long-Range Plan for Technology.*

Respectfully submitted,

Carolyn Honea Crawford, Chairman
State Board of Education

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EXECUTIVE SUMMARY

The Long-Range Plan for Technology was adopted by the State Board of Education in November 1988 and codified in Section 14.021 of the Texas Education Code. The plan plots the course for meeting educational needs through the application of technology and for implementing concomitant changes in education from 1988 to 2000. The plan recognizes that both technology and the practice of education are changing. Reflected in the plan is the belief that technology applied to the practice of education can be an effective tool to facilitate change; and, that technology can be used as a means of achieving the vision of an educational system hallmarked by the characteristics of excellence, equity, and accountability.

This *Progress Report on The Long-Range Plan for Technology* is prepared in accordance with Section 14.021 of the Texas Education Code for approval and transmittal by the State Board of Education to the governor and the 73rd Texas State Legislature. The report is divided into five major categories and details the accomplishments achieved beginning November 1988 through August 1992. The following categories were identified in the plan:

- Hardware Procurement and Purchase,
- Courseware Adoption and Provision,
- Training and Certification,
- Delivery Systems, and
- Research and Development.

The technologies encompassed in *The Long-Range Plan for Technology* and in this progress report are computer-based systems; devices for storage and retrieval of massive amounts of information; telecommunications for audio, video, and information sharing; and, other electronic media that can help meet the instructional and productivity needs of public education. The priority areas of use for the technology, as specified in the plan, focus on the following areas:

- classroom instruction,
- instructional management,
- distance learning, and
- communications.

The Long-Range Plan for Technology of the Texas State Board of Education is based on principles regarding education and technology to which the State Board of Education is committed. The principles adopted by the board are listed below:

- Technology must be infused into instruction: technology is, by definition, a tool;
- Technology is one of many vehicles that must work in concert with other practices for improving education;
- Districts and campuses must be accorded flexibility in selecting technologies and applications to meet local needs while being held accountable for continual improvement in achievement and productivity;
- State and local governments must provide incentives for technology acquisition and implementation;
- Teachers are essential for high-quality education;
- Staff training is critical to successful integration of technology;
- Future decisions must be based on the results of research; and,
- Technology changes rapidly and unpredictably, and technology changes the setting into which it is incorporated. The plan, therefore, is flexible in the long term, is able to incorporate a variety of technologies, and is able to take advantage of a multi-vendor environment. The education system must also be flexible and able to revise assumptions as technology contributes to changing the current educational environment.

The aforementioned principles remain the basis upon which actions have been taken in the years since 1988, and will be taken in the future, to achieve the educational vision expressed in The Long-Range Plan for Technology.

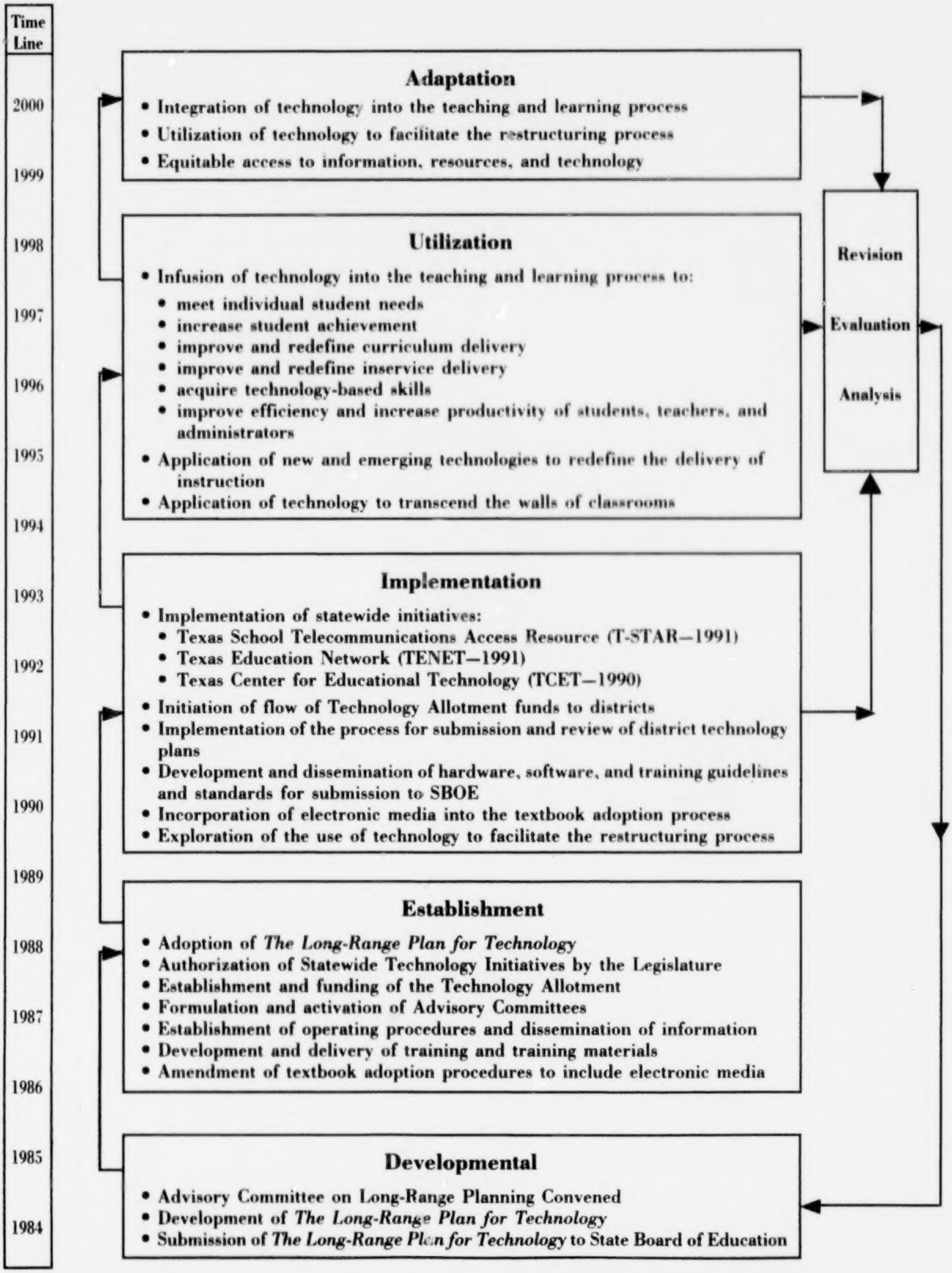
The two years leading up to Phase 1 (1988-1992) concentrated on the design, development, and adoption of *The Long-Range Plan for Technology*. The Commissioner's Advisory Committee on Long-Range Planning for Technology and state and national experts in the applications of technology to education contributed critical technical and instructional guidance. Phase 1 of the plan marked the beginning of the implementation process as illustrated on the Stages of Evolution chart, shown on page 4 of this report.

Significant strides have been made toward the accomplishment of the key state actions that were outlined in the plan. Those accomplishments are detailed in the chart of Major Events and Accomplishments Phase I: 1988-1989 through 1991-1992 on page 5 of this report.

This *Progress Report on The Long-Range Plan for Technology* was developed by staff of the Division of Technology Services within the Department of Technology Applications. The Division of Technology Services is itself an organizational entity created within the Texas Education Agency as a result of the adoption of the plan and the passage of Senate Bill 650.

The intent of this *Progress Report on The Long-Range Plan for Technology* is to provide a comprehensive description of the progress made toward the implementation of Phase 1 of *The Long-Range Plan for Technology* (1988-2000).

STAGES OF EVOLUTION



Adaptation

- Integration of technology into the teaching and learning process
- Utilization of technology to facilitate the restructuring process
- Equitable access to information, resources, and technology

Utilization

- Infusion of technology into the teaching and learning process to:
  - meet individual student needs
  - increase student achievement
  - improve and redefine curriculum delivery
  - improve and redefine inservice delivery
  - acquire technology-based skills
  - improve efficiency and increase productivity of students, teachers, and administrators
- Application of new and emerging technologies to redefine the delivery of instruction
- Application of technology to transcend the walls of classrooms

Implementation

- Implementation of statewide initiatives:
  - Texas School Telecommunications Access Resource (T-STAR—1991)
  - Texas Education Network (TENET—1991)
  - Texas Center for Educational Technology (TCET—1990)
- Initiation of flow of Technology Allotment funds to districts
- Implementation of the process for submission and review of district technology plans
- Development and dissemination of hardware, software, and training guidelines and standards for submission to SBOE
- Incorporation of electronic media into the textbook adoption process
- Exploration of the use of technology to facilitate the restructuring process

Establishment

- Adoption of *The Long-Range Plan for Technology*
- Authorization of Statewide Technology Initiatives by the Legislature
- Establishment and funding of the Technology Allotment
- Formulation and activation of Advisory Committees
- Establishment of operating procedures and dissemination of information
- Development and delivery of training and training materials
- Amendment of textbook adoption procedures to include electronic media

Developmental

- Advisory Committee on Long-Range Planning Convened
- Development of *The Long-Range Plan for Technology*
- Submission of *The Long-Range Plan for Technology* to State Board of Education

MAJOR EVENTS AND ACCOMPLISHMENTS

Phase 1: November 1988 - August 1992

Timeline	
1992	**Implementation Plans for Statewide Technology Initiatives Approved** • Technology Allotment Funds flow to districts, September 1992 • Texas Center for Educational Technology (TCET), in progress • Texas Education Network (TENET), in progress • Texas School Telecommunications Access Resource (T-STAR), in progress
1991	**Implementation Plans for Statewide Technology Initiatives Approved** • Electronic Information Transfer System—Texas Education Network (TENET), February 1991 • Integrated Telecommunications System—Texas School Telecommunications Access Resource (T-STAR), February 1991 • Senate Bill 351 passed in Sixth Called Session, 71st Legislature, included technology funds in Foundation School Program
1990	**Implementation Plans for Statewide Technology Initiatives Approved** • District Demonstration Pilot Site Program awards, January 1990 • Integrated Telecommunication System Feasibility study completed, September 1990 • Texas Center for Educational Technology (TCET) established, June 1990 • Advisory Committee on Technology Standards (ACTS) established • First electronic textbook adoption, November 1990
1989	**Enabling Statutes for *The Long-Range Plan for Technology*** • Senate Bill 650 passed in regular Session, 71st Legislature, authorized Statewide Technology Initiatives • Senate Bill 1 passed in Sixth Called Session, 71st Legislature, established Technology Allotment • Proclamation 66 called for Electronic Instructional Media Systems (EIMS)
1988	***The Long-Range Plan for Technology*** adopted by the State Board of Education, November 1988
1985	**HB 1304** passed in Regular Session, 69th Legislature, authorized Computer Software Advisory Committee (SAC) and *The Long-Range Plan for Technology*

INTRODUCTION

The Long-Range Plan for Technology of the Texas State Board of Education 1988- 2000 was developed and adopted during 1987 and 1988 under the direction of the board in response to pressing educational, economic, and legislative needs. The plan formulated a vision for the future integration, application, and management of information resources technology in public education. The vision focused on achieving an educational system hallmarked by the characteristics of excellence, equity, and accountability. The use of technology and provisions to ensure equal access for all students to technology were perceived as key requirements for creating such an educational system.

Purposes of the Plan

In addition, the plan articulated the purposes for using technology throughout the public education system. Technology in the schools is to be used for the following purposes:

- to improve learning and teaching and the ability to meet individual students' needs in order to increase student achievement;
- to improve curriculum delivery in order to help meet the needs for educational equity across the state;
- to improve inservice delivery;
- to improve the efficiency and productivity of students, teachers, and administrators; and,
- to encourage development by the private sector and acquisition by districts of technologies and applications appropriate for education.

Principles of the Plan

The Long-Range Plan for Technology is based on principles regarding education and technology to which the State Board of Education is committed. The principles adopted by the board are listed below:

- Technology must be infused into instruction: technology is, by definition, a tool;
- Technology is one of many vehicles that must work in concert with one another improving education;

- Districts and campuses must be accorded flexibility in selecting technologies and applications to meet local needs while being held accountable for continual improvement in achievement and productivity;

- State and local governments must provide incentives for technology acquisition and implementation;

- Teachers are essential for high-quality education;

- Staff training is critical to successful integration of technology;

- Future decisions must be based on the results of research; and,

- Technology changes rapidly and unpredictably, and technology changes the setting into which it is incorporated. The plan, therefore, is flexible in the long term, able to incorporate a variety of technologies and to take advantage of the multi-vendor environment. The education system must also be flexible, able to revise assumptions as technology contributes to changing the current educational environment.

The aforementioned principles remain the basis upon which actions have been taken in the years since 1988, and will be taken in the future, to achieve the educational vision expressed in *The Long-Range Plan for Technology*.

The actions taken by the legislature and the State Board of Education (SBOE) since the adoption of *The Long-Range Plan for Technology*, in concert with the development and integration of technology into the districts, have made achieving the vision more certain. While much remains to be done, the implementation of the plan has begun: this progress report will show how far Texas has come.

ACCOMPLISHMENTS

This progress report is prepared in accordance with Section 14.021 of the Texas Education Code. It is the second of such reports. The first progress report on *The Long-Range Plan for Technology (1988-2000)* was approved by the State Board of Education for transmittal to the governor and the 71st state legislature May 1991. The report covered the accomplishments achieved during the first 28 months since the passage of the plan.

This progress report is a combined report of all of the accomplishments achieved from November 1988 through August 1992. The report is divided into the five major categories that were identified in the plan.

- Hardware Procurement and Purchase
- Courseware Adoption and Provision
- Training and Certification
- Delivery Systems
- Research and Development

A list of the proposed actions to be discussed is included in the introduction for each category. Proposed actions are followed by a summary of the accomplishments for the first reporting period (November 1988-March 1991) and, thereafter, the accomplishments for the current 16-month reporting period (April 1991-August 1992) are covered. (See Appendix A: Proposed Actions Index.)

Phase 2 of *The Long-Range Plan for Technology* commenced September 1992. Therefore, key state actions, goals, and expected outcomes in Phase 2 have been included and follow the accomplishments in each section.

The format is designed to link the past accomplishments with future directions in order to give a more comprehensive picture of the on-going support, continued development and application of statewide technology initiatives implemented in Phase 1 of the plan.

Significant strides have been made toward the accomplishment of the key state actions included in each area. A chronological illustration of state-level accomplishments is shown on page 5 of this report.

The two years leading up to Phase 1 (1988-1992) concentrated on the design, development, and adoption of *The Long-Range Plan for Technology*. The Commissioner's Advisory Committee on Long-Range Planning and state and national experts in the applications of technology to education contributed critical technical and instructional guidance.

Phase 1 of the plan marked the beginning of the implementation process (see Stages of Evolution on page 4). The focus of Phase 1 has centered around the following start-up activities:

- implementation of *The Long-Range Plan for Technology*;
- development and dissemination of information and products;
- design and development of preservice, inservice, and administrative training workshops and materials;
- training of regional education service center, district-level, agency staff, and staff from other educational entities;
- formulation and activation of advisory committees;
- establishment and funding of the Technology Equipment Allotment (also referred to as the Technology Allotment);
- development and dissemination of procedures for developing technology plans and end-of-year reports;
- establishment of procedures for the submission and review process for district technology plans;
- initiation of the flow of funds to districts;
- development and dissemination of hardware and software guidelines and standards;
- bid preparation and contractual negotiations;
- operationalization of statewide telecommunication system, the Texas Education Network (TENET);
- equipment installation and operation of the Texas School Telecommunication Access Resource (T-STAR);
- incorporation of electronic media into the textbook adoption process; and,
- establishment of the Texas Center for Educational Technology (TCET).

HARDWARE PROCUREMENT AND PURCHASE

Fundamental to the implementation of *The Long-Range Plan for Technology* is the technology itself. In order to realize the vision of education in the year 2000, students and educators will need to have access to the technologies. If such access is not uniformly provided, neither the goals expressed in the legislative mandates nor the goals expressed in the board's plans will be met.

The technologies encompassed in *The Long-Range Plan for Technology* are computer-based systems, devices for storage and retrieval of massive amounts of information, telecommunications for audio, video, and information sharing, and other electronic media devised by the year 2000 that can help meet the instructional and productivity needs of public education. The priority areas of use for hardware procurement and purchases, as stated in the plan, focused on the following areas:

- **classroom instruction,**
- **instructional management,**
- **distance learning, and**
- **communications.**

***The Long-Range Plan for Technology* envisioned that equitable access to technology would require the following actions during the implementation of Phase 1 of the plan:**

- **establish a Technology Equipment Allotment;**
- **fund Technology Preview Centers;**
- **review district and campus plans; and**
- **appoint a State Board of Education Advisory Committee for Technology Standards and adopt standards for hardware.**

The accomplishments that have been achieved during Phase 1 of the implementation of *The Long-Range Plan for Technology* for each of the aforementioned actions are addressed in the following sections of this progress report in some detail; where

appropriate, the discussion of certain items has been combined. Further, each section briefly addresses the goals and expected outcomes of Phase 2 (September 1992 through August 1996) of the plan.

TECHNOLOGY EQUIPMENT ALLOTMENT

PROPOSED ACTION

Create Technology Equipment Allotment

The Long-Range Plan for Technology called for the creation of a Technology Equipment Allotment that would provide $50 per average daily attendance (ADA) per year on an equalized basis to districts to be expended as needed for hardware and courseware purchases and for facilities modification.

Accomplishments November 1988-March 1991

The Sixth Called Session of the 71st Texas Legislature passed Senate Bill 1, which established a Technology Fund. The provisions of that legislation are now codified in Subchapter D, Sections 14.061 through 14.065, of the Texas Education Code, effective September 1, 1992. The Technology Fund is to be initiated at $30 per average daily attendance (ADA) per year for the 1992-1993 school year and is to increase by $5 per ADA per year each year thereafter until 1996-1997, when the allotment will reach $50 per ADA per year. Funding for the technology allotment is now included in Tier 1 of the Foundation School Program and the allocation is therefore fully funded; the allocation to the districts is based upon average daily attendance.

The allotment is to be used as follows:

- "the acquisition of technological equipment and related services, including hardware, software, courseware, training, subscription fees for telecommunications, database services, and other related services;
- the procurement of an electronic on-line catalog circulation system, CD-ROM, or other emerging technology for each school library;
- the provision for electronic access to regional, statewide, national, and international resources;
- the acquisition of telecommunications equipment in classrooms for database applications; and,
- the research and development of emerging instructional technology."

Expenditure of funds for those purposes is to be monitored by the agency to ensure that at least 75% of the allotment is used to provide classroom instructional services and programs. In order to receive a technology allotment, districts are required to submit a five-year technology plan to the agency and to the Department of Information Resources (DIR).

Accomplishments April 1991-August 1992

The Advisory Committee for Technology Standards (ACTS) and agency staff developed the submission process for the Technology Allotment. School district technology plans are required under Subchapter D, Section 14.065 of the Texas Education Code. To meet this legislative requirement for receiving the Technology Allotment, a five-year technology plan and executive summary were to be submitted to the Texas Education Agency and the Department of Information Resources. This first year is viewed as a pilot year to establish the role and responsibilities of the agency, school districts, and the DIR in the submission and review of technology plans and the administration of the allotment. The submission date of May 30, 1992 was established to expedite submission of plans and the review process. Agency staff reviewed plans to verify that legislative requirements for a five-year plan, technology staff development, and appropriate expenditure of allotment funds were met.

The DIR provided a technical review of plans from districts receiving over $500,000 in allotment funds for the 1992-1993 school year. This technical review addressed:

- the move to open systems protocol for full and easy exchange of information within and among public schools in the state of Texas, other Texas educational entities, and those in other states;
- the State Telecommunications Plan and initiatives and directives;
- state-of-the-art operating systems; and,
- cost-effectiveness.

To assist districts in the development and submission of their five year technology plan, Educational Technology staff conducted 38 full-day planning workshops around the state for key district personnel and technology planning team members. Additional technology planning sessions were presented at 15 regional and state technology conferences and the National Educational Computing Conference (NECC) in June 1992. Technology planning assistance is continuously available to districts from agency staff, on the Texas Education Network (TENET), and through regional education service centers.

Technology Equipment Allotment funds, presently referred to as technology allotment funds, were authorized in August 1992 to flow to 941 districts that had filed five-year technology plans with the agency. Each school district was notified by TENET, where available, as well as by mail as to the status of its technology plan. Only districts that submitted technology plans received allotment funds. As plans were received and processed by the agency, funds were authorized to flow to districts.

Texas Education Code, Subchapter D, Section 16.150 indicates that each district shall be allotted the amount specified in Section 14.063 of this code, using the equalized proration formula for distribution. The Technology Allotment provided for $30 per Average Daily Attendance (ADA) for the 1992-1993 school year. Deductions may be made by the Commissioner of Education for the purposes of financing programs authorized under Subchapter C, Chapter 14 of this code. These programs include: The Texas Center for Educational Technology (TCET), Texas School Telecommunications Access Resource (T-STAR), Texas Education Network (TENET), Technology Preview Centers, and Advisory Committee for Technology Standards (ACTS).

Technology Allotment funds will be used to support further development and implementation of the following statewide initiatives:

- Electronic Information Transfer System (TENET), including
  - provision of all communication costs for districts using the network,
  - provision of a Help Desk for all users
  - maintenance of system equipment and the network,
  - curriculum development and training for educators, and
  - statewide licenses for programming on the network including encyclopedia(s), news resources, and other products.
- Integrated Telecommunications System (T-STAR), including
  - installation of 75-100 additional satellite dishes on school campuses,
  - provision of approximately three hours per week of programming to schools, and
  - provision of training for districts in the use of the system.

- Texas Center for Educational Technology (TCET), including
  - membership in TCET for all school districts,
  - research and development of emerging technologies in education,
  - research and program evaluation of the use of various technologies in education,
  - dissemination of information regarding this research and development, and
  - expansion of research sites to schools and universities throughout the state.
- Establishment of support for technology preview centers in regional education service centers

TECHNOLOGY PREVIEW CENTERS

Technology preview centers are located at regional education service centers and include equipment, software, courseware, and staff to provide inservice and technical assistance to districts in the areas of technology planning, products, services, and effective uses of technology. These centers have expanded from the original idea of being showplaces and demonstration centers for state-of-the-art technology. The preview center has evolved to become a full-service unit staffed with experts who can address the growing needs of the school districts they serve.

Technology preview centers were also established to assist districts, other institutions, parents, and students in the following areas:

- improve decision-making related to the acquisition of hardware, software, and services, and the implementation of educational technology in order to improve student achievement;
- create a mechanism for cooperation among regional education service centers, school districts, the Texas Education Agency, and other institutions;
- serve as a community resource for parents, students, businesses, and universities; and,
- provide orientation as well as in-depth training.

Technology preview centers were established at regional education service centers in a way that would facilitate the following activities:

- fosters cooperation among regional education service centers for procurement of hardware, software, and technology services;
- establishes priorities for training and acquires appropriate training;
- involves and takes advantage of the expertise within districts; and,
- provides equitable opportunities for developers, manufacturers, and vendors of educational technology to present information and deliver appropriate training.

The establishment, implementation, and continual operation of technology preview centers will be conducted in order to accomplish the following goals:

- serve as a catalyst for assisting districts in the realization of the promise of technology's role in the restructuring of education and improvement of student achievement;
- reduce duplication of time and effort for stakeholders in education;
- ensure equity of access for previewing and evaluating educational technology and delivery of training;
- improve consistency and continuity for support of technology in districts; and,
- reduce the gap between the time technology is developed and the time it is utilized and/or implemented in the classroom.

While preview centers are places to showcase and demonstrate technology and allow district personnel hands-on experience with exemplary instructional systems as well as hardware, software, courseware, and other services, they also are a concept whereby staff are available to provide continual assistance to districts in planning for the effective use and integration of technology into their daily operations. The preview centers serve as effective resources designed to increase the level of technology expertise in the district.

The following services are provided to the districts through technology preview centers located at the regional education service centers:

- Technology Planning Initiative (TPI)
    - orientation and access to state of the art technologies for demonstrating and previewing applications consistent with *The Long-Range Plan for Technology*;
    - training in the planning process;
    - technical assistance in planning for technology;
    - orientation to various planning tools;
    - assistance in developing, evaluating, and revising local district technology plans; and,
    - assistance in planning systematic approaches to completing annual reports.
- Texas Education Network (TENET)
    - technical training regarding TENET;
    - technical assistance to district staff on an ongoing basis;
    - assistance in securing equipment, software, manuals, and other support materials to facilitate use of TENET;
    - staff development regarding instructional uses of TENET; and,
    - information on resources accessible through telecommunications.
- Texas School Telecommunications Access Resource (T-STAR)
    - technical training regarding T-STAR;
    - information regarding educational programming from a variety of sources;
    - information regarding connecting additional local classrooms/buildings with T-STAR reception sites;
    - staff development in the utilization of programming delivered via T-STAR;
    - access to a viewing center for T-STAR programming; and,
    - support materials for T-STAR programming.
- Texas Center for Educational Technology (TCET)
    - dissemination of information from the TCET to districts;

  - information on identification and design of research/development projects;
  - opportunities for participation in TCET research/development projects as appropriate; and,
  - opportunities for training resulting from TCET projects.

- *The Educational Software Selector (TESS)*
  - technical assistance for *TESS* and *The Latest & Best of TESS* (software selection tools);
  - updated versions and maintenance of *TESS* and *The Latest & Best of TESS*;
  - training in utilization of *TESS* and *The Latest & Best of TESS*; and,
  - searches of *TESS* and *The Latest & Best of TESS* upon request.

- Other technology districts receive through technology preview centers:
  - technology staff development responsive to district needs;
  - training and retraining for utilization of state-approved electronic textbook applications;
  - communications link to districts regarding statewide events, projects, and developments;
  - cooperative bidding procedures to acquire hardware and software;
  - identification of sites exemplary in their use of technology; and,
  - support in the use of technology in specialized areas as appropriate.

In summary, the Technology Equipment Allotment was created during the implementation of Phase 1 of *The Long-Range Plan for Technology* and funds began to flow to the districts September 1992. As a result, computer-based technologies will be distributed more equitably throughout the state so that technology acquisition will not vary according to wealth. Additionally, districts will be better able to plan for and acquire technologies and technology-related goods and services as necessitated by the integration of technology into the schools.

Phase 2
1992 - 1996

The key state action and expected outcomes for the Technology Equipment Allotment, as outlined in Phase 2 (1992-1993 through 1995-1996) of *The Long-Range Plan for Technology*, focus on the continued development and support for this statewide initiative. Moreover, this action has been integrated into *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998*.

PROPOSED ACTION

Maintain Technology
Equipment Allotment

Maintain the Technology Allotment; increase the annual per ADA allotment, as appropriate.

Goals
Phase 2

☐ Establish an annual reporting procedure for the expenditure of Technology Allotment funds as required by legislation. Districts are required to submit an annual report describing the percentage of the technology allotment spent for classroom instructional services and programs; how the use of the allotment related to the training of district personnel using technology systems; and, how the expenditures are related to accomplishing the goals of the district's five-year technology plan.

☐ Provide data from technology plans and annual reports to guide future legislation to support the integration of technology into the schools.

Expected Outcomes
Phase 2

■ Computer-based technologies will be distributed equitably throughout the state.

■ Districts will be able to phase in new equipment, meet State Board of Education equipment targets, and alter facilities as required by the integration of technology.

DISTRICT AND CAMPUS PLANS

PROPOSED ACTION

Review District and
Campus Plans

The plan called for the review of district and campus technology plans during accreditation visits.

Accomplishments
November 1988-
March 1991

In September 1988, the agency began conducting training on a model planning process for the creation of district and campus level technology plans to assist the districts with preparation. These plans were to be in place by September 1989. The training was provided to both ESC and district staff using a train-the-trainers model.

Accomplishments April 1991-August 1992

As noted, Senate Bill 1 requires districts to submit five-year technology plans to the agency and to the Department of Information Resources (DIR) in order to qualify for an allotment from the Technology Fund.

Technology plans are reviewed by agency staff for compliance with legislative requirements before Technology Allotment funds are authorized. A more thorough review is conducted to identify exemplary technology plans and to provide constructive feedback to districts and ESCs. Districts can use this information as they review and update their plans. Data from the technology plans is gathered and entered into an electronic database to provide valuable information regarding the expenditure of the Technology Allotment. Districts are also required to submit an annual report describing: the percentage of the technology allotment spent for classroom instructional services; how the use of the allotment related to the training of district personnel using technology systems; and, how the expenditures are related to accomplishing the goals of the district's five-year technology plan.

The technology plan submission and review process is in its pilot year and rules for the continued administration of the allotment will be recommended to the SBOE in 1993. Accreditation teams did review campus plans in past years. In the coming years, technology plans may become a part of the campus and district improvement plans.

In summary, district technology plans were reviewed during the implementation of Phase 1 of *The Long-Range Plan for Technology* and, as a result, districts will receive technical assistance and support services from the agency and the regional educational service centers.

Phase 2 1992 - 1996

The key state action and expected outcome(s), as outlined in Phase 2 (1992-1993 through 1995-1996) of *The Long-Range Plan for Technology*, focus on the continuation of the review of campus and district plans. Moreover, this action has been integrated into *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998.*

Continued Review of Plans

PROPOSED ACTIONS

Continue to review district and campus plans for technology during accreditation visits.

Goals
Phase 2

☐ Pursue new approach for review of district and campus technology plans. Technology will be an integral component of district and campus improvement plans.

☐ Review criteria established by agency staff in collaboration with the Advisory Committee for Technology Standards Acts and technology contacts in the regional education service centers will be used to determine the quality of technology plans and annual updates submitted by districts.

Expected Outcomes
Phase 2

■ Feedback to districts will identify strengths and weaknesses which enables planning committees to address targeted areas through the evaluation and revision of district technology plans.

■ Districts will continue to receive technical assistance in technology planning.

■ Data for planning and decision making will continue to be available.

ADVISORY COMMITTEE FOR TECHNOLOGY STANDARDS

PROPOSED ACTION

Appoint Advisory
Committee on
Technology Standards

The Long-Range Plan for Technology proposed that the State Board of Education appoint an Advisory Committee for Technology Standards (ACTS) to advise the board on quality, technical, functional, security, service, and other standards. The committee was to consult with developers and educators in other states in the development of such standards. Hardware standards were to be developed by the committee and recommended to the State Board of Education for adoption to guide districts in acquiring technology products.

Accomplishments
November 1988-
March 1991

The creation of an Advisory Committee for Technology Standards authorized in Senate Bill 650 was codified in Section 14.047, Standards for Services and Equipment, of the Texas Education Code. The State Board of Education appointed a 15 member Advisory Committee for Technology Standards (ACTS) to advise the board. Various educators, industry representatives, and developers of such standards of other states were utilized.

Accomplishments April 1991- August 1992

Representatives of the committee regularly conducted opinion surveys, polls, and consensus-gathering activities within the state by phone, electronic mail, surface mail, personal contacts, and through various presentation activities. These activities included local, area, and state conferences and handouts, question and answer sessions, and personal interaction with the attendees. The committee consulted with developers and educators in other states concerning the development of such standards.

The committee examined educational approaches to and standards for, the use of technology in the classroom. The committee established a set of principles to guide the development of standards. These principles recognized the need to establish broad standards, supported by more detailed technical assistance handbooks, to ensure that sufficient flexibility is maintained to accommodate the varied circumstances of the districts while moving the entire system toward certain standards of practice and performance. The principles also recognized the necessity of establishing certain concepts for new standards which would allow acceptance of new technologies and practices without being encumbered by barriers of installed bases of old equipment.

Subcommittees were formed to consider specific standards for equipment, training and staff development, courseware, and other support services. The committee included appropriate industry area representatives, consultants, and various technology experts to assist the subcommittees in their work. The Department of Information Resources (DIR), the General Services Commission (GSC), the Software Advisory Committee (SAC), and curriculum specialists of the Texas Education Agency also participated, as appropriate, in the work of the committee.

Two formal information dissemination meetings for vendors and for suppliers were held. Invitations were sent to contacts who might have an interest in educational technology. The 20 regional education service centers met twice for the purpose of receiving standards information as well as other educational technology information. Regional education service centers also received the proposed guidelines and standards at over 38 statewide Technology Allotment training sessions. A component of these sessions was the solicitation of input regarding all phases of guidelines and standards of educational technology.

Broad standards were created to assist districts in the effective and efficient use of technology. These standards were accompanied by more detailed technical-assistance handbooks to assist districts in applying those standards to ensure selection and acquisition of products of high quality. The committee recommended that each standard be issued as a guideline for one to two years and as a required standard thereafter. This will give districts sufficient time to adapt their five-year technology plans to the new standard.

The Advisory Committee for Technology Standards envisioned several methods for the distribution of standards information to school districts. TENET conferences and data centers will contain information, guidelines, and standards for quality, technical specifications, functions, security, service, and other technology features. Other methods of information delivery include packets that are mailed regularly to school districts and handouts at local, area, and state conferences.

In summary, an Advisory Committee for Technology Standards was appointed during the implementation of Phase 1 of *The Long-Range Plan for Technology* and, as a result, guidelines and standards were developed by the committee to be recommended to the State Board of Education for adoption to guide districts in acquiring technology products. In addition, state level standards adopted by the Department of Information Resources may be recommended for adoption by the public school system. Other standards are likely to result from the work of the Software Advisory Committee and from the award of the contracts for the electronic information transfer system and the integrated telecommunications system, as only certain hardware and software configurations can be used in conjunction with those networks. The committee may include such standards in its recommendations to the board.

Phase 2
1992 - 1996

The key state actions and expected outcomes outlined in Phase 2 (1992-93 through 1995-96) of *The Long-Range Plan for Technology* focus on the continued development and support of statewide initiatives implemented under Phase 1 of the plan. Moreover, these actions have been integrated into *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998.*

Support Advisory Committee on Technology Standards

Proposed Action

Continue to adopt quality, technical, functional, security, and service standards for hardware and other standards, based on the recommendations of the State Board of Education Advisory Committee for Technology Standards, results of research provided by the Texas Center for Educational Technology (TCET), technology demonstration programs, and others.

Goals Phase 2

- ☐ **Continue to establish guidelines and standards according to greatest need first.**
- ☐ **Utilize TENET as a central clearing house for the guidelines and standards.**
- ☐ **Develop standard technology competencies for educators.**

Expected Outcomes Phase 2

- ■ **Technology competencies as outlined in the proposed standards guide for teachers and administrators will improve possibilities of greater student achievement through technology usage.**
- ■ **Software guidelines and standards will provide a framework for the acquisition of quality software and efficient use of funds.**
- ■ **Establishment of student and teacher workstation ratios will provide guidelines for acquisition of those technologies.**
- ■ **Technical assistance handbooks and electronic media containing technology standards and guidelines will be available to all school districts.**
- ■ **Guidelines and standards will be created and/or expanded from their present form reflecting the constantly evolving nature of educational technology.**
- ■ **School districts will be knowledgeable and have access to resources and information for making wise technology acquisition choices.**

COURSEWARE ADOPTION AND PROVISION

As technology infuses schools, Electronic Instructional Media Systems (EIMS) will begin to supplant traditional textual materials. Such systems will convey the entire course content and meet the essential elements for the curricula in which used, just as do traditional textbooks. In addition, use of courseware, which addresses multiple areas of a specific curriculum, and software, which addresses a single specific topic in a specific curriculum, will continue to supplement traditional textbook-based curricula. The use of products such as software, courseware, and EIMS significantly expands the classroom experience. EIMS, in particular, will continue to grow because of their ability to deliver high-quality visual images and corresponding audio experience to complement and enhance the curricular material.

The original plan envisioned that the textbook adoption process would require an amendment to include the adoption of technology-based products. The plan also recognized the synergistic relationship between technology and the environment in which it is used and thus anticipated that changes in rules governing supporting structures, such as essential elements and minimum class time, would also be required.

The introduction of software, courseware and electronic instructional media systems into the educational process was envisioned to require the following ten actions during Phase 1 of the plan.

- Amend textbook adoption procedures and rules to include courseware.
- Review the textbook adoption process in light of the inclusion of courseware.
- Establish the Advisory Committee for Technology Standards to advise the board on standards for courseware.
- Adopt standards for educational courseware.
- Approve existing software and courseware based upon recommendations of the Software Advisory Committee.

- Incorporate information on courseware and other technology-based instructional tools.

- Incorporate information on public broadcasting and other distance education programs into curriculum frameworks and course guidelines.

- Include electronic media in Proclamations 67 and 68.

- Review and revise curriculum rules affecting supporting structures such as essential elements and minimum class time to reflect the impact of technology-based curricula.

- Investigate and implement state licensing and electronic delivery of software to districts for preview and instructional use.

The accomplishments that have been achieved during Phase 1 of the implementation of *The Long-Range Plan for Technology* for each of the aforementioned actions are addressed in the following sections of this progress report in some detail; where appropriate, the discussion of certain items has been combined. Further, each section briefly addresses the goals and expected outcomes of Phase 2 (September 1992 through August 1996) of the plan.

TEXTBOOK ADOPTION

PROPOSED ACTIONS

Amend Textbook Adoption Procedures

The Long-Range Plan for Technology proposed that the textbook adoption procedures and rules be amended to include software, courseware, or electronic instructional media systems (EIMS). The plan recommended similar changes be incorporated in the textbook adoption process and include electronic media in Proclamations 67 and 68.

Accomplishments November 1988-March 1991

The textbook adoption procedures have been revised to facilitate the state textbook committee's review of electronic instructional media systems (EIMS). No rules have been amended yet to accommodate the use of these systems.

On November 10, 1990, the State Board of Education adopted the first electronic instructional media system ever adopted in Texas—or in the nation—by adopting *Windows on Science*, a videodisc-based program developed by Optical Data, for elementary science. School districts seem to be embracing this alternative to a traditional textbook to a greater degree than expected. The agency projects that *Windows on Science* will be in use by approximately thirty percent of the elementary science teachers in Texas, who will be using this videodisc-based program as the primary delivery system of instruction. Other states, including West Virginia, Utah, Virginia, Oklahoma, Kentucky, Georgia, and Montana, have requested information on revision of procedures to replicate what Texas has done.

Accomplishments April 1991-August 1992

The state has amended the law to encourage the adoption of electronic instructional media systems (EIMS). In 1987, the legislature amended the definition of textbook to include, "...computer software, including but not limited to applications using computer assisted instruction, interactive videodisc, other computer courseware, and magnetic media provided that these can be delivered in lieu of textbooks with similar costs to the state." Senate Bill 1, passed during the Sixth Called Session of the 71st Legislature in 1990, eliminated the phrase, "provided that these can be delivered in lieu of textbooks with similar costs to the state," thus acknowledging that the development of "magnetic media" can cost more than the development of a traditional textbook.

In response to Proclamation 68, publishers responded by submitting three electronic instructional media systems (EIMS) for Computer Literacy. These systems are to stand alone and contain software for word-processing, database management, spreadsheet, telecommunications, and a programming language. Multimedia components are provided on videodisc or videotape. An EIMS for Chemistry I was also submitted which included computer software and videodisc materials.

In summary, the state amended the law to encourage the adoption of electronic instructional media systems (EIMS) during the implementation of Phase 1 of *The Long-Range Plan for Technology* and, as a result, one EIMS was submitted for Chemistry and three systems were submitted for Computer Literacy.

Phase 2 1992 - 1996

The key state action and expected outcome outlined in Phase 2 (1992-1993 through 1995-1996) of *The Long-Range Plan for Technology* focus on the continued incorporation of electronic instructional media into the textbook adoption process. Moreover, this action has been integrated into *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998.*

PROPOSED ACTION

Incorporate Use of Electronic Media

Review the incorporation of electronic media materials into textbook development, adoption, and distribution procedures and revise regulations accordingly.

Goals Phase 2

☐ To provide a variety of instructional materials that utilize the advantages of technology as appropriate.

☐ To provide opportunities for textbook and software publishers to work with the agency as textbook proclamations are developed to incorporate electronic media.

☐ To provide support for an electronic instructional media system for Computer Literacy that stands alone, in lieu of the traditional textbook, and contains software for word processing, database management, spreadsheet, telecommunications, and a programming language.

☐ To provide students with interactive materials via technology that enhance the teaching and learning process.

Expected Outcome Phase 2

■ Textbooks adopted through 1996 will incorporate or constitute electronic media in instructional and management materials, as appropriate.

CURRICULUM RULES

PROPOSED ACTION

Revise Curriculum Rules

The Long-Range Plan for Technology recommended that the scheduled review of Chapter 75 rules include revisions recognizing the importance of technology skills needed by citizens in the next century. For example, essential elements were to be revised to reflect new knowledge requirements and areas affected by the instructional use of technology, such as the minimum class time required for promotion and graduation, were to be revised to reflect individualized student progress.

Accomplishments November 1988-March 1991

The scheduled review of Chapter 75 essential elements has reflected a strong input from the education community to incorporate the use of technology to enhance the instructional process. The results of these efforts were finalized with the review and adoption of the recommendations by the State Board of Education in late 1991.

Accomplishments April 1991-August 1992

The essential elements for Computer Literacy taught at grades 7 and 8 were revised through the curriculum review process to change the focus of the course to a hands-on approach. The programming languages were expanded to include hypermedia as well as traditional languages. These new essential elements are the basis for the new electronic instructional media systems (EIMS) called for in Proclamation 68 for Computer Literacy.

Phase 2 1992 - 1996

The key state action and expected outcomes for curriculum rules, as outlined in Phase 2 (1992-93 through 1995-96) of *The Long-Range Plan for Technology*, focus on the continued review, evaluation, and revision of curriculum rules. Moreover, this action has been integrated into *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998.*

PROPOSED ACTION

Evaluate and Revise Curriculum Rules

During the scheduled revision of Chapter 75, evaluate and revise curriculum rules in light of the implications of technology for curriculum content, promotion and graduation requirements, and other areas affected by instructional use of technology.

Goals Phase 2

☐ All students graduating from Texas public schools will be technology literate by the year 2000.

☐ Technology-based competencies will be included on the Texas Assessment of Academic Skills by 1995. Curriculum rules will need to reflect the changes necessary to ensure student success in these competencies.

Expected Outcome Phase 2

■ Provisions for curriculum content and for delivery, promotion, and graduation will continue to be revised to emphasize the skills needed by citizens in the next century and to encourage individual student progress and maximum achievement.

CURRICULUM FRAMEWORKS

PROPOSED ACTION

Revise Curriculum Frameworks

The Long-Range Plan for Technology recognized that effective infusion of technology into the educational process required changes to specific curriculum frameworks to reflect the use and impact of technology, including distance education courseware supplied by the Public Broadcasting System (PBS) and other providers, in delivering those courses. The plan proposed that both curriculum frameworks and course guidelines be modified as appropriate to textbooks, and courseware as well as on other technology-based instructional delivery and instructional management materials.

Accomplishments November 1988-March 1991

The infusion of technology into the educational process is being accomplished through the inclusion of technology-related concepts and ideas in revised curriculum framework documents. The amount and diversity of such information included in these frameworks has increased in documents that reflect more recent publication dates. An example of increasing importance of technology in curriculum frameworks reflecting an increased awareness of the role of technology in the instructional process are the new frameworks for geometry, languages, and art. In these documents, suggestions are made for the use of calculators, computers, and the use of software and courseware in those curricula to improve the quality of instruction.

Accomplishments April 1991-August 1992

Following the creation of formal framework documents, presentations at conferences and workshops conducted by agency staff representing specific subject areas reflect increased attention to the use of technology for instructional purposes. These meetings have served well for the sharing of ideas and consensus gathering for improved uses for technology integration. Technology-related activities either have included special interest sessions or have been the focus of the entire program. Professional meetings attended by teachers and administrators have, as part of their agendas, also shown an increased focus on the use of technology as a primary instructional strategy in delivering quality educational programs. The adoption of electronic instructional media systems in several areas of the curriculum should further assist the technology integration as suggested by these frameworks.

SOFTWARE ADVISORY COMMITTEE

PROPOSED ACTION

Approved Software Advisory Committee Recommendations

The Long-Range Plan for Technology suggested that the State Board of Education approve specific software and courseware based upon recommendations of the Computer Software Advisory Committee.

Accomplishments November 1988-March 1991

The 15 member Software Advisory Committee (SAC), appointed annually by the State Board of Education, was established in 1985 under Chapter 14, Subchapter A, of the Texas Education Code. The committee was charged with the following responsibilities:

- develop and implement a system under which the group continuously evaluates computer software for use in public school classrooms;

- make recommendations to the board concerning the computer software that should be approved and acquired for use in the classroom; and,

- cooperate with designers and publishers of computer software in developing and making available computer software suited to classroom use.

During the 1987-1988 school year, the committee developed the *Texas Software Reference Guide* which was distributed to each school campus in Texas. As components of the guide, the committee selected *Only the Best: The Discriminating Software Guide for Preschool-Grade 12*, published by Educational News Service in California and the *1988-89 Educational Software Preview Guide*, published by the Software Library and Clearinghouse of the California Teacher Education and Computer Center. The board approved the recommendation of the Software Advisory Committee to disseminate this information to school districts in Texas. The guide was a useful tool for teachers in the selection of appropriate software.

After the *Texas Software Reference Guide* was distributed to schools in 1988, numerous appropriate software packages were developed. In early 1991, the Software Advisory Committee reexamined alternative approaches to its statutory charges. After an investigation of available options, the members concluded that an approach which specifically and continuously addresses the review and evaluation of educational software was necessary. The committee decided that the most appropriate method to provide current software information to schools was electronically.

Therefore, to meet its first two charges, the Software Advisory Committee voted to recommend that the agency join a consortium of other states—The States' Consortium for Improving Software Selection. The states in the consortium commissioned

Educational Products Information Exchange (EPIE) Institute, a not-for-profit organization, to develop a structured process for evaluation of educational software and identification of the best of the available products. Through the consortium membership, states receive a license for software selection tools.

Accomplishments April 1991-August 1992

At the May 1991 State Board of Education meeting, the board approved the Software Advisory Committee's recommendation to join the States' Consortium for Improving Software Selection, managed by the Educational Products Information Exchange (EPIE) Institute. Other members of the consortium include: Michigan, New York, Georgia, Indiana, and Tennessee. As members of the consortium, states work together to address software issues and make recommendations for improvements in the software selection/evaluation tools available to educators. The consortium representative from Texas holds the position of Chair of the States' Consortium for Improving Software Selection.

The Educational Software Selector (TESS), the tool provided by the consortium, is available with a state license to consortium members on disk in both Macintosh and MS-DOS formats and as a database on the Texas Education Network (TENET). TESS includes over 11,000 educational software and courseware descriptions. In addition, a subsequent review process produces a smaller subset of approximately 2,000 software descriptions titled *The Latest and Best of TESS. The Latest and Best of TESS* is available on disk and TENET as well as in printed form.

During Fall 1991, the computer version of *TESS* and *The Latest and Best of TESS* were field-tested by numerous Texas educators to ensure that the tools met the state's needs and were user friendly. Feedback from the field testing was sent to EPIE Institute, and improvements were made.

The first update that was available for all schools was the April 1992 computer version. Information about the consortium tools was distributed to all Texas public schools in early May 1992 through the brochure—*Software Selection Tools for Texas Schools*. The brochure introduced the April 1992 computer version of *TESS* and *The Latest and Best of TESS* and the 1991-1992 edition of the printed version of *The Latest and Best of TESS*. Also, in this brochure was the announcement that there would be a version of *TESS* on the Texas Education Network (TENET).

Regional Education Service Center XIX volunteered to duplicate and distribute copies of the computer version to any Texas educator. The agency duplicated and EPIE Institute distributed the printed version of *The Latest and Best of TESS, 1991-1992 Edition.*

The price to schools for these software selection tools was for the actual duplication and distribution cost. TESS came on eight to nine disks, while *The Latest and Best of TESS* came on three disks. *The Latest and Best of TESS* in printed format contained 438 pages of text. Schools were responsible for providing necessary equipment to run the computer and TENET versions. The computer version of *TESS* requires 35 megabytes of hard disk space. To load and run *The Latest and Best of TESS* requires nine megabytes of hard disk space. Educators could access the TENET version of *TESS* with a computer, modem, communications software, and access to a phone line. With the technology allotment, schools will be able to purchase necessary equipment if they do not have it already.

The User's Manual for PC-*TESS* and Mac-*TESS* was adapted for Texas educators in Summer 1992 and sent by ESC XIX to all schools that ordered the computer version. The manual also gave instructions for using *TESS* on TENET. A portion of the manual was designed to be used for staff development.

During the Summer of 1992, *TESS* was placed on TENET, giving Texas educators the opportunity to use a keyword search to assist in software selection. Information about the software selection tools in the various formats also was placed on TENET in the News and Conference area.

One of the most important factors in the success of the *TESS* project is the support of regional education service center staff members who were designated as *TESS* contacts. The *TESS* contacts at each regional education service center were provided an *Education Service Center TESS Contacts Information* booklet to assist in the implementation of the TESS project. The University of Texas at Austin was contracted by the Texas Education Agency to make enough copies of the computer version to be distributed to all education service centers. It also made copies for the Texas Center for Educational Technology and the Texas Education Agency.

The State Board's Software Advisory Committee worked to meet its first two charges for the K-12 public schools in Texas.

However, the state license for the computer version of the software tools extended to all institutions of higher education, private schools, and public libraries in Texas. The Software Advisory Committee will evaluate the use of the software selection tools in Texas public schools after one complete cycle of the tools are available to schools. This includes the April version of *TESS* as well as a Winter update of the tools.

To meet its third charge, the committee discussed the following specific areas: software preview policies, pricing structures, and software development issues. The committee discussed working with industry representatives both to develop new products and to encourage modification of existing products adapted to Texas-specific needs, such as developing software for special needs students and referencing the Texas essential elements. The Software Advisory Committee worked with the Advisory Committee for Technology Standards to develop a list of software guidelines to distribute to schools. Recommendations resulting from the work involved in the third charge have not been brought to the board for action during the first phase.

In summary, the State Board of Education approved the Software Advisory Committee's recommendation to join the States' Consortium for Improving Software Selection during the implementation of Phase 1 of *The Long-Range Plan for Technology* and, as a result, educators are better able to select quality software for instructional use.

Phase 2
1992 - 1996

The key state action and expected outcomes, as outlined in Phase 2 (1992-1993 through 1995-1996) of *The Long-Range Plan for Technology*, focus on the continued review and recommendations for software approval. Moreover, this action has been integrated into *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998.*

PROPOSED ACTION

Approve Software Advisory Committee Recommendations

The plan suggests that the State Board of Education annually review and recommend software for approval and, by 1993, review the procedures of the Software Advisory Committee and revise the procedures accordingly.

Goals
Phase 2

☐ Continue to meet the three charges as specified in Chapter 14, Subchapter C.

☐ Evaluate the structured process for evaluation of educational software and identification of the best of the available products.

☐ Ensure that all Texas public school educators have access to the software selection tools.

☐ Assist schools in planning for the use of the software selection tools.

☐ Work closely with the Software Publishers Association and other software developers and publishers in the development and acquisition of educational software that meets the needs of our educators and students.

Expected Outcomes Phase 2

- Information about instructional and administrative software can be made equally accessible to all Texas schools.
- When educators use the software selection/evaluation tools, they can focus on the integration of the software appropriately into the curriculum areas.
- Software can be developed specifically to meet the needs of all students and educators.

STATE LICENSES AND ELECTRONIC DELIVERY

PROPOSED ACTION

Implement State Licenses and Electronic Delivery

The Long-Range Plan for Technology recommended that state licenses for software and courseware be investigated and implemented, if appropriate. Electronic delivery of software to districts for preview and instructional usage was also to be considered, if appropriate.

Accomplishments November 1988-August 1992

The Software Advisory Committee has considered these and related issues as appropriate to its work. At this time, electronic delivery of software to districts has not been feasible utilizing the Integrated Telecommunications System, which will link all entities of the public education system. However, this idea has been examined using other means of dissemination.

Electronic delivery of software to districts will become more feasible with the implementation of the Integrated Telecommunications System. The integrated telecommunications system or Texas School Telecommunications Access Resource (T-STAR) plan for very small aperture terminal (VSAT) services was delayed pending further studies by the Texas Education Agency. This effectively prevented an all-format information delivery network being developed since only analog television was planned to be delivered by the television receive only (TVRO) network. As a result, the delivery of software to districts, the mass distribution of printed matter, and data exchange could not be accomplished. The agency, while continuing to pursue the VSAT studies and pursuant to DIR decisions, may also investigate options for use of the TVRO network to deliver software and other digital information to all districts and possibly to regional education service center technology preview centers.

In the interim, the agency has created funding for a technology preview center to be located in each regional education service center. These centers would, among other things, serve as points of distribution for software, courseware and electronic instructional media systems for preview and testing by district personnel. The Software Advisory Committee is discussing mechanisms such as the use of loan arrangements for placement of products into these technology preview centers and will then open a dialog with providers of software, courseware, and electronic instructional media systems to determine those most practical and beneficial.

The committee also has discussed the possibility of state licensing for educational software. Action was not taken on state licensing during Phase I.

Phase 2
1992 - 1996

The key state action and expected outcomes, as outlined in Phase 2 (1992-1993 through 1995-1996) of *The Long-Range Plan for Technology*, focus on the review and continued development of an electronic delivery system. This action has been integrated into *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998.*

Review and Revise State Licenses and Electronic Delivery

PROPOSED ACTION

The Long-Range Plan for Technology suggests that the State Board of Education review licensing and electronic delivery of software, if initiated in Phase I, and revise accordingly.

Expand integrated telecommunications systems, including public broadcasting, to support increased delivery by distance of approved coursework for credit, supplemental instruction, inservice, technical assistance information, and PEIMS data.

Goals Phase 2

- ☐ Revisit state licensing, as it relates to current software acquisition needs.
- ☐ Continue to work with providers of software, courseware, and electronic instructional media systems (EIMS) to assist regional education service centers in accessing the most practical and beneficial software for the technology preview centers.
- ☐ Facilitate electronic delivery of software and other information rapidly and equitably to public schools.

Expected Outcomes Phase 2

- Districts will receive quality software appropriate for local needs at lowest available cost.
- Communications, information and data exchange among education entities in Texas will be rapid and efficient.
- Delivery of computer software and informational/instructional products directly to school sites equipped with T-STAR via satellite will be routine and cost-effective.

TRAINING AND CERTIFICATION

Fundamental to the successful introduction of technology into the educational process is the development of appropriate skill levels in the use of technology by educators. Both preservice and inservice instruction thus was seen as a critical component in the effective infusion of technology-based instruction into schools.

Such inservice instruction was envisioned to consider and address the thoughtful and seamless integration of technology into both instructional and administrative processes rather than mere exposure to the mechanics of operating the technology.

***The Long-Range Plan for Technology* envisioned 13 actions necessary to provide appropriate preservice and inservice training to all participants at all levels in the process—administrators, teachers, and members of school boards—during Phase 1.**

- **Implement standards for administrator certification which include training in the use of technology in management and instruction.**
- **Consider including an evaluation component in administrator appraisal instruments regarding the actual use of technology in management and instruction.**
- **Consider adding instruction on the use of technology in administrator instructional leadership training.**
- **Train regional education service center staff and other trainers in district planning for technology and in meeting keyboarding requirements.**
- **Revise preservice requirements to address integration of technology into education.**
- **Incorporate, as appropriate, the use of technology into induction year training.**
- **Establish summer institutes for training educators in the use of technology in instruction and instructional management.**
- **Establish certification requirements for teachers who deliver courses by distance to Texas.**

- Establish certification requirements for out-of-state providers delivering courses through distance education technology.

- Establish school board member training in technology.

- Use distance education technology to deliver training on topics such as legislative and regulatory requirements.

- Establish a State Board of Education Advisory Committee for Technology Standards.

- Adopt standards for workstation training materials.

The accomplishments that have been achieved during Phase 1 of the implementation of *The Long-Range Plan for Technology* for each of the aforementioned actions are addressed in the following sections of this progress report in some detail; where appropriate, the discussion of certain items has been combined. Further, each section briefly addresses the goals and expected outcomes of Phase 2 (September 1992 through August 1996) of the plan.

ADMINISTRATOR CERTIFICATION

PROPOSED ACTION

Revise Administrator Certification

The Long-Range Plan for Technology recommended that standards for administrator certification be changed to include provisions reflecting the need for training in the use of technology in management and instruction. The plan also proposed that an evaluation component be added to administrator appraisal instruments to address the use of various technology systems in management and instruction.

Accomplishments 1988 - 1992

At present, agency requirements for administrator training in the use of technology do not exist. However, the Texas Administrative Code 137.371, Subchapter J, Program Requirements for Professional Certificates, includes computer applications to education as an option block for administrator certification. It is anticipated that the use and integration of technology applications, both as management and instructional tools, will be required in the future.

While no technology requirements currently exist in approved university-based programs for certification, program requirements for alternative certification for administrators do explicitly require knowledge of computer applications in education.

Phase 2
1992 - 1996

Phase 2 of *The Long-Range Plan for Technology* key actions and expected outcomes for administrator certification focus on revisions to include the use of technology.

PROPOSED ACTION

Review and Revise Administrator Certification

The Long-Range Plan for Technology recommended that standards for administrator certification be changed to include provisions reflecting the need for training in the use of technology in management and instruction. The plan also proposed that an evaluation component be added to administrator appraisal instruments to address the use of various technology systems in management and instruction.

Goals
Phase 2

☐ Review certification program standards in regard to technology for administrators and revise accordingly.

☐ Review administrator appraisal instruments for inclusion of the ability to use and to encourage the appropriate use by staff of technology for management and instruction and revise the instruments accordingly.

☐ Review the provision of inservice in technology to administrators and revise accordingly.

Expected Outcome
Phase 2

■ Preservice and employed administrators will be able to use technology in management responsibilities and to support appropriate use by staff of technology in instruction and management so that communications and decision making will improve in efficiency and quality.

DISTRICT PLANNING FOR TECHNOLOGY

PROPOSED ACTION

Include District Planning for Technology

The Long-Range Plan for Technology recognized the importance of training for district staff both to help them successfully plan for technology and to help them meet keyboarding requirements. The plan further suggested that regional education service center staff be trained to serve as resources to district staff.

Accomplishments November 1988-March 1991

The agency has assumed the leadership role by requiring that district and campus-level technology plans be developed and providing training for such planning. Materials were developed by agency staff to assist districts in developing district and campus technology plans. Using these materials, training for both regional education service center and district personnel was conducted by agency staff during the fall of 1988 and the spring of 1989. Over 250 individuals were trained both to replicate these training sessions and to facilitate planning in their schools and regions.

Keyboarding training was also developed by the agency, since elementary keyboarding is an integral element of district and campus technology plans. Agency staff developed both keyboarding curricula materials and keyboarding training. The "training of trainers" model was used at the regional educational service centers to disseminate materials and provide hands-on training for elementary keyboarding. Over 250 individuals were trained. Regional educational service centers continue to offer keyboarding training as a service to schools in their regions.

Accomplishments April 1991-August 1992

The agency has continued its leadership role in providing technical assistance in the area of technology planning. The Texas Education Code, Section 14.065 requires districts to submit five-year technology plans to the agency and the Department of Information Resources in order to qualify for an allocation from the Technology Allotment created by that legislation. To assist districts in the preparation of effective plans, *The Handbook for Technology Planning in Texas Public Schools* was developed by the Advisory Committee for Technology Standards in coordination with agency staff. This handbook, the Technology Plan Executive Summary, and the General Instructions for Submitting Technology Plans were field tested by 50 school districts and all 20 education service centers. Based on feedback from the field test, appropriate revisions were made and the final planning packets were distributed to all districts in the state to provide assistance in meeting the legislative requirements for the Technology Allotment.

Agency staff conducted 38 technology planning workshops at all of the 20 regional education service centers to assist district personnel in the development of their five-year technology plans. Workshops were attended by over 5,500 key district personnel and technology planning team members. Regional education service centers offered additional planning workshops for school personnel in their area. Additional planning sessions were held at 15 regional and state technology conferences as well as the National Educational Computing Conference in June 1992.

In these planning workshops and at other regional and state conferences, keyboarding continued to be stressed as an important competency for elementary students. In addition, other competencies recommended for elementary programs included: the use of educational software packages, word-processing, databases, spreadsheets, desktop publishing, software-authoring packages, videodiscs, CD-ROM, multimedia, telecommunications, and other technologies. Regional education service centers continued to provide keyboarding assistance to the schools in their regions.

A session on technology planning and the Technology Allotment was broadcast over TI-IN on March 16, 1992. Information regarding technology planning, the Technology Allotment, and the Technology Plan Executive Summary form were also made available to districts on TENET.

Phase 2
1992 - 1996

The key state action and expected outcomes outlined in Phase 2 (1992-1993 through 1995-1996) of *The Long-Range Plan for Technology* focus on the continued leadership in providing training for district and educational service center staff. This action has been integrated into *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998.*

PROPOSED ACTIONS

Continue District Planning for Technology

Continue to provide leadership in technology training for district staff both to assist them in successfully planning for technology and to assist them in meeting the requirement for students to be able to demonstrate technology competencies. Continue to train regional education service center staff to serve as resources to district staff.

Goals Phase 2

☐ Include in teacher appraisal, as appropriate, effectiveness of teachers' use of technology.

☐ During required inservice days and for Advanced Academic Training (AAT), continue to provide teacher inservice in technology planning and use and other topics, based on district and campus technology plans and teacher appraisals.

Expected Outcome Phase 2

- Employed teachers and administrators will be increasingly skilled in the use of technology.

PRESERVICE REQUIREMENTS

PROPOSED ACTION

Revise Preservice Requirements

The Long-Range Plan for Technology stated that preservice requirements should be reviewed and revised to accommodate the integration of technology into the educational process.

Accomplishments 1988 - 1992

Senate Bill 1, passed during the Sixth Called Session of the 71st Legislature, contained a provision on Modern Teaching Practices, now codified as Section 13.049 of the Texas Education Code. Section 13.049(a) states, "Standards adopted under Sections 13.032 or 13.035 of this code for teacher training shall include training in the use of technology and effective teaching practices in the classroom." Agency staff have met with the Commission on Standards for the Teaching Profession to develop approaches to implement the provisions of Modern Teaching Practices.

The Texas Education Code, Chapter 13.050 established Centers for Professional Development and Technology. This legislation allows institutions of higher education, with approved teacher education programs, the challenge and opportunity of developing a new vision for professional and technological education for all educators.

The State Board of Education and the Texas Higher Education Coordinating Board were authorized to develop a process for the establishment of centers for professional development through the colleges of education for the purpose of integrating technology and innovative teaching practices in the preservice and staff development training of teachers and administrators.

Texas has taken a leadership role by potentially eliminating restrictive state provisions in order to facilitate and support the development of teacher and administrator preparation programs and providing funding to assist in the restructuring process. This effort integrates state-of-the-art technology and innovative teaching practices into preservice and staff development training of teachers and administrators. Through regional Centers for Professional Development and Technology, this collaborative will encourage concerted efforts between universities, school districts, regional education service centers, and the private sector.

The eight Centers for Professional Development and Technology are quite diverse in their individual program descriptions, but all share four "themes" that unify this Texas initiative. Some expected outcomes include: successful students, effective teachers, life-long learners, and integration of technology.

Focusing on these themes, each center has developed strategies to meet goals in their particular locale, taking into account their particular student needs. Each center is committed to collaboratively providing field-based teacher preservice education, staff development, and teaching and learning opportunities using state-of-the-art technology.

Each center is working to implement a comprehensive field-based teacher education program. Their preservice education must be more field-based and more closely aligned with effective teaching practices. Other areas of emphasis include the study of both diversity in students' learning methods and classroom management techniques.

One of the major purposes of the centers is to address the learning needs of a culturally diverse student population. No other state has created such an initiative that links the success of its teacher preparation programs to the success of schools and students.

Inservice training programs are being strengthened to inspire teachers to become life-long learners. The training, which is being developed for administrators and higher education personnel as well, is also designed to prepare teachers to teach skills which students will need in the 21st century.

State-of-the-art technology is being incorporated into the centers to not only expand the delivery of instruction but also to prepare students majoring in education to teach in the classrooms of tomorrow. Many of the centers will set up computer labs for teachers and students and interactive electronic classrooms for distance learning. The centers will also be used for development of new technology-based instructional techniques and innovative teaching practices in the multicultural classroom.

The Texas Centers for Professional Development and Technology are as follows:

- Panhandle—South Plains Center: Texas Tech University, Lubbock Christian University, Wayland Baptist University, West Texas State University, Amarillo College, South Plains College, Lubbock ISD, Friendship ISD, Plainsview ISD, Wilson ISD, Canyon ISD, Region XVI Education Service Center, and Region XVII Education Service Center
- Project North East Texas Center: East Texas State University in Commerce, East Texas State University in Texarkana, Mesquite ISD, Greenville ISD, Commerce ISD, Texas Instruments, Region VIII Education Service Center, and Region X Education Service Center
- Texas Education Collaborative: Texas A&M University, Prairie View A&M University, Bryan ISD, College Station ISD, Conroe ISD, Somerville ISD, Waller ISD, Region IV Education Service Center, and Region VI Education Service Center
- Center for Educational Development and Excellence: University of Texas at San Antonio, Trinity University, Incarnate Word College, Our Lady of the Lake University, St. Mary's University, Northside ISD, San Antonio ISD, Northeast ISD, Edgewood ISD, and Region XX Education Service Center.
- Teachers Researching for Educational Success Center: University of North Texas, Dallas ISD, Region X Educational Service Center, and Project Bluebonnet.
- Stephen F. Austin Center: Stephen F. Austin State University, Nacogdoches ISD, Lufkin ISD, Henderson ISD, Center ISD, Diboll ISD.
- Southwest Texas Center: Southwest Texas State University, San Marcos Consolidated ISD, Highland Park Elementary School, Austin, Region XIII Education Service Center, and San Marcos Telephone Company.
- Regional Collaborative Center: Laredo State University, Laredo ISD, United ISD, Zapata ISD, Cotulla ISD, Laredo Junior College, Apple Computer, Inc., and Region I Education Service Center.

The establishment of the centers will potentially eliminate restrictive state provisions in order to facilitate and support the development of teacher and administrator preparation programs and providing funding to assist in the restructuring process. Eight centers have been established. Each center has a strong collaborative which has the support of a strong partnership between universities, school districts, administrators, teachers, and the community.

SUMMER INSTITUTES

PROPOSED ACTION

Conduct Summer Institutes

Summer institutes were recommended as a means to train teachers in the use of technology instruction and instructional management. The plan envisioned that such institutes would feature teachers knowledgeable in the use of technology in their own classrooms. Those teachers would share such knowledge and train other teachers to successfully integrate technology into their instructional delivery.

Accomplishments 1988 - 1992

The Texas Center for Educational Technology (TCET) offered a summer institute and a workshop in 1991. Funding for both was furnished by the Texas Center for Educational Technology. Stipends were given to those educators selected to attend. The summer institute was held at the University of North Texas in Denton. Twenty-five (25) teachers from across the state spent 15 days in collaboration with researchers from the TCET and in idea sharing sessions. For those wishing to attend the summer institute for graduate college credit, arrangements were made with the University of North Texas.

A workshop was offered at the University of Texas in Austin under the direction of the Texas Center for Educational Technology. This workshop, which counted for 15 hours of Advanced Academic Training (AAT), provided training and instruction to 40 teachers of language arts and English in the use technology to enhance process writing skills.

In 1992, the Texas Center for Educational Technology offered one summer institute at the University of North Texas. Twenty-five (25) teachers from across Texas received instruction and training on a variety of technology issues. Individuals who desired graduate credit received three hours.

The Texas School Telecommunications Access Resource (T-STAR) program projected budgets for 1993 to support summer institutes at selected regional education service centers to train other ESC and district staff about applications of satellite services to curriculum and staff development at the campus level. Other institutes are being planned for district staff in video design and production skills.

Phase 2
1992 - 1996

The key state action and expected outcomes, as outlined in Phase 2 (1992-1993 through 1995-1996) of *The Long-Range Plan for Technology*, recommend the continuation of summer institutes. This action has incorporated into *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998.*

PROPOSED ACTION

Continue to Conduct Summer Institutes

Continue summer institutes as a means to train teachers in the use of technology instruction and instructional management.

Goal
Phase 2

☐ Plans in 1993 call for a summer institute sponsored by the Texas Center for Educational Technology at the University of North Texas. The participants for the institute will be classroom teachers and administrators. Also, participants selected will be professors from institutions of higher education where Centers for Professional Development and Technology are located. This institute will focus on an extensive use of telecommunications in the classroom, with emphasis on science and social studies at the middle school level. Participants will be expected to communicate with the Texas Center for Educational Technology and each other throughout the year regarding uses, ideas, and obstacles as they apply their knowledge in practical situations. Information will be collected for dissemination to others for replication.

Expected Outcome
Phase 2

■ Through the continuation and expansion of summer institutes, more teachers will have access to training and development in the use of technological tools. This should increase the infusion of technology into the classroom.

DISTANCE EDUCATION CERTIFICATION

PROPOSED ACTION

Develop Distance Education Requirements

The Long-Range Plan for Technology proposed certification requirements for both instructors and providers of distance education to Texas schools.

Accomplishments November 1988-March 1991

While special "certification standards" were not developed for distance education teachers, state requirements for teachers of distance education courses are in place and have been applied to the distance education approval process for several years. Likewise, guidelines are in place and have been used to evaluate the qualifications, policies and resources of providers of distance education courses. The commissioner of education took the initiative in seeking cooperation and relief for state-specific or inappropriate certification criteria for distance education instructors in other states. For example, while there are other states which require that Texas teachers of distance education courses originating in Texas be certified in the receiving state, Texas does not apply such criteria to distance education instructors from other states. Often the other states' requirements mean that a Texas distance education teacher must take a course in the history of that state in order to receive certification to be a teacher of students in that state.

Likewise, no action was taken to require certification or otherwise establish state criteria for distance learning facilitators, although the agency guidelines do encourage certain characteristics and responsibilities for the on-site facilitator.

Texas guidelines for distance education delivery programs have been used as a model by several other state departments of education as they developed their own approval process.

Accomplishments April 1991-August 1992

No new activities for certification of distance learning teachers or facilitators were initiated during this period.

Phase 2 1992 - 1996

The key state actions and expected outcomes, as outlined in Phase 2 (1992-1993 through 1995-1996) of *The Long-Range Plan for Technology*, recommend continued development and review of standards for distance education providers.

PROPOSED ACTION

Review and Revise Distance Education Requirements

Review standards for certification of deliverers of instruction by distance and revise accordingly.

Goals Phase 2

☐ Reach agreements with other states for reciprocity or mutual recognition of requirements for distance learning teachers when those teachers are instructors of Texas students via distance learning services.

☐ Establish preparation or practical experience requirements for distance learning teachers and on-site facilitators.

☐ Revise appropriate sections of the agency guidelines for distance learning.

Expected Outcomes Phase 2

■ Teachers, by distance, will continue to be at least as proficient as in-state on-site teachers.

■ Instruction, by distance, will continue to be at least as effective as traditional instruction, when the availability of qualified on-site teachers is limited.

DELIVERY OF TRAINING

PROPOSED ACTION

Utilize Training Delivery Systems

The Long-Range Plan for Technology recommended that public broadcasting and other distance education delivery providers be used to train teachers and other regional and local staff.

Accomplishments November 1988-March 1991

The agency provided training to district personnel via telecommunications broadcasts provided through Texas Public Broadcasters and the TI-IN Network.

Many technical assistance topics were covered in the 30-minute to 60-minute audio-interactive video programs produced by agency staff and broadcast by the TI-IN Network.

Examples of technical assistance programming which were delivered are:

- 1991-92 Compliance Monitoring Workshop

- Library Media Center Facilities
    - Part I: Planning Library Facilities
    - Part II: Characteristics of Excellent Library Facilities
- Learning about TENET (the Texas Education Network)
    - Part I: Learning to Explore TENET
    - Part II: Electronic Mail and Conferencing on TENET
    - Part III: Organizing and Utilizing Resources on TENET
- The Library Media Program and Site-Based Decision Making
- Organizing a Science Fair
- Managing the Certification Process
- Excellence in Elementary Science and Mathematics Teaching
- The Library Media Specialist: A Member of the Campus
- Interdisciplinary Team
- Innovative Practices for Maintaining Special Needs Students in the Regular Environment
- Update on Educational Technology in Texas
- TIPS (The Texas Education Agency's Information for Public Schools) Weekly
- Writing Across the Curriculum in the Elementary Grades
- Automating the School Library
- Coordinating Programming for School Age Parents
- What's New on TENET? (Texas Education Network)

Recording rights to these broadcasts allowed any school and education service center in the state to copy the programs on videotape. In addition to tapes of broadcast programming, additional audio and video series and ad hoc materials were produced or acquired by the agency. They were duplicated and distributed directly to school districts and regional education service centers. Such materials included training tapes, staff development programs, informational presentations, instructional support and public service announcements.

"The Texas Education Report" continued to be broadcast on all Texas PBS stations, courtesy of the public broadcasters and Texas Association of School Boards.

The agency provided training to district personnel via Texas public broadcasters and the TI-IN Network. After June of 1992, satellite time courtesy of TI-IN Network dropped significantly and the agency plan to become operational as a broadcast center was delayed. Technical assistance services provided by the agency via satellite decreased.

Limited video production at the agency was made available on video tape to school districts and regional education service centers. Production was facilitated when the agency's upgraded video production studio became operational during this period. Within the agency program for expanding an integrated telecommunications system, the agency's television capabilities were broadened when construction was completed on the production and broadcast facility in the William B. Travis Building. The agency began producing commercial quality video with upgrades to the cameras, audio and master control system.

Other video materials produced included training tapes, staff development programs, informational presentations, instructional support and public service announcements.

When broadcast capabilities are acquired, the studio will become the T-STAR production center for live, interactive television via satellite. Programs broadcast will be oriented to school staff and cover a wide range of agency technical assistance and professional education topics, concentrating on priority topics established by the State Board of Education.

The Advisory Committee for Technology Standards (ACTS) recognized the importance of training to all aspects of successful use of technology systems in education. Technology training cannot address just the technology itself to be successful; the training must address the concepts involved in successfully educating and learning through use of technology. To that end, among concerns that will be addressed by this committee as it develops standards for technology training are: times of the work day when teachers or administrators are most receptive to learning; timely follow-up activities which utilize concepts learned during training; and, conceptual training which includes global views of technology applications and the relationship of those applications to the educational process.

Phase 2
1992 - 1996

Phase 2 of *The Long-Range Plan for Technology* proposes expansion of state delivery services. This action has been incorporated into *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998.*

PROPOSED ACTION

Utilize Training Delivery Systems

Expand state delivery of inservice by distance.

Goal Phase 2

☐ Enable all public schools to access a variety of inservice courses, seminars and other training experiences via telecommunications facilities.

Expected Outcomes Phase 2

■ Teachers, administrators, and staff will receive uniform and timely inservice training in a variety of areas including limited training and information from the agency T-STAR satellite broadcasts.

■ All schools will be equipped to access a variety of inservice telecasts and distance learning opportunities.

TECHNOLOGY STANDARDS

PROPOSED ACTION

Adopt Technology Standards

The Long-Range Plan for Technology suggested that an Advisory Committee for Technology Standards be appointed by the State Board of Education and that the board adopt standards for workstation-based training and training materials.

Accomplishments November 1988-March 1991

A subcommittee of the Advisory Committee for Technology Standards was appointed. This subcommittee addressed training and staff development requirements and materials for all areas of technology. Several documents included the guidelines produced by this subcommittee. *The Handbook for Technology Planning in Texas Schools* was the first to address the issue. This document was mailed to all school districts in Texas and was provided at statewide Technology Allotment training sessions. Other documents containing guidelines and information about training and staff development requirements and materials were distributed at several statewide conferences and at the National Educational Computing Conference.

Phase 2 1992 - 1996

The key state action and expected outcome, as outlined in Phase 2 (1992-93 through 1995-96) of *The Long-Range Plan for Technology*, suggest the continued development and review of technology standards. This action has been integrated into *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998*.

Review and Revise Workstation Training Materials

Goal
Phase 2

Expected Outcome
Phase 2

PROPOSED ACTION

The Long-Range Plan for Technology suggested that an Advisory Committee for Technology Standards adopt standards for work-station-based training and training materials.

☐ Review standards for workstation training materials and revise accordingly.

■ Teachers will be increasingly skilled in the use of technology.

DELIVERY SYSTEMS

The Long-Range Plan for Technology envisioned creation of a statewide technology infrastructure to enable sharing and exchange of information between and among all entities of the public education system.

Nine actions were proposed to properly establish the necessary statewide information sharing infrastructure during Phase 1 of *The Long-Range Plan for Technology*.

- Cooperatively investigate and plan appropriate statewide telecommunications systems with other state agencies and institutions of higher education.

- Coordinate telecommunications systems for instruction, inservice and electronic mail with the Public Education Information Management System (PEIMS) and the Department of Information Resources (DIR).

- Establish a statewide electronic information transfer system and establish procedures for replacing postal service with electronic delivery of documents to districts.

- Establish an Instructional Television Allotment.

- Expand integrated telecommunications systems by building on public broadcasting and other existing distance education mechanisms.

- Adopt standards for telecommunications delivery systems.

- Implement, as appropriate, state licensing and electronic delivery of software to districts for preview and instructional use.

- Collaborate with other states and with the federal government in the electronic transmission of software, programming, and other information.

- Use distance education delivery systems to train regional and local staff in topics such as legislative and regulatory requirements.

The accomplishments that have been achieved during Phase 1 of the implementation of *The Long-Range Plan for Technology* for each of the aforementioned actions are addressed in the following sections of this progress report in some detail; where appropriate, the discussion of certain items has been combined. Further, each section briefly addresses the goals and expected outcomes of Phase 2 (September 1992 through August 1996) of the plan.

STATEWIDE TELECOMMUNICATIONS SYSTEMS

PROPOSED ACTION

Investigate and Implement Statewide Telecommunications System

The Long-Range Plan for Technology proposed that investigation of statewide telecommunications systems proceed in coordination with other state agencies and institutions of higher education. The plan further suggested that proposed statewide networks be coordinated with plans for the Public Education Information Management System (PEIMS).

Accomplishments November 1988-March 1991

The plans developed for the implementation of the electronic information transfer system (EITS) and the integrated telecommunications system (ITS) were to take advantage of existing state resources available from other agencies as well as from institutions of higher education. The agency's plans were coordinated with internal divisional staff such as those involved with PEIMS, school library services, special populations, and public information.

Requests for Advance Certification of both statewide networks were submitted to the Department of Information Resources (DIR) for its review and approval. Discussions were initiated with DIR staff to assure comprehensive interagency planning for joint leasing of satellite transponder time and the eventual ownership and operation of network satellite hub facilities. Similar discussions have been held with the Telecommunications Division of the General Services Commission (GSC). Preliminary discussions have also been held with staff at agencies such as the Department of Human Services, the Department of Health, and the Texas Rehabilitation Commission regarding their interest in using ITS and EITS facilities to meet their specific needs.

The kinds of projects which could be addressed using these facilities included:

- Schools with receive-only satellite dishes for video broadcast might serve as locations for night and weekend television delivery of community training in health or child abuse programs.

- As resources allow, other state agencies may use video uplink and/or studio facilities acquired by the agency for distance education and inservice of Texas educators.

- The proposed digital send-and-receive satellite dishes (VSATs) of the ITS network (T-STAR) might be shared as a data communications link in communities in which other state agencies also need to provide services.

- Electronic bulletin board and conferencing facilities could also be used by other agencies. As an example, the Department of Health could establish a bulletin board of public health notices specific to interests of Texas educators using the facilities of the electronic information transfer system or of T-STAR, if the VSAT component is implemented.

Most of the discussions with other state agencies and institutions of higher education produced no action during Phase 1 as an operational status was not reached for the initial phase of T-STAR (the Integrated Telecommunication Network) partially due to delays in developing the VSAT component for digital capabilities. T-STAR received 10 inquiries by other major state agencies and by several university network representatives about the feasibility of cooperative development, particularly acquisition of satellite transponder time and VSAT services, of delivery capabilities.

Expressions of interest in use of T-STAR capabilities for services to communities and other agency clients continue to be made by agencies such as the Comptrollers Office, Commission on Arts, Texas Department of Commerce, Mental Health and Mental Retardation (MHMR), and Austin Community College. All contacts were reserved for future discussion when T-STAR video broadcasting becomes operational while certain types of digital services could not be realistically explored until the VSAT component of the integrated system is operational. Thus, PEIMS data access activities were not investigated further relative to the integrated telecommunications system nor was remote electronic printing pursued as a T-STAR service.

Accomplishments April 1991-August 1992

Phase 2
1992 - 1996

The key state action and expected outcome, as outlined in Phase 2 (1992-1993 through 1995-1996) of *The Long-Range Plan for Technology*, continue to explore the utilization of statewide telecommunications systems. This action has been incorporated into *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998*.

PROPOSED ACTION

Investigate Statewide Telecommunication System

Continue to cooperate with other state agencies and institutions of higher education in Texas on the investigation of and decisions regarding statewide telecommunications systems.

Goal
Phase 2

☐ **Provide public school access to telecommunications services equitably.**

Expected Outcome
Phase 2

■ **Telecommunications systems at the state level and throughout the education system will be efficient.**

STATEWIDE ELECTRONIC INFORMATION TRANSER SYSTEM

PROPOSED ACTION

Establish Electronic Information Transfer System

The Long-Range Plan for Technology **proposed the creation of a statewide electronic information transfer system (EITS) to facilitate information exchange by providing to each district the hardware, software, limited on-line access time and training on the use of the system. The EITS was to be acquired by the Texas Education Agency on behalf of the districts through a competitive bidding process.**

The agency evaluated alternatives for the acquisition of services necessary for the creation and maintenance of an enhanced electronic communications network capable of transmitting information among and between the members of the public education system in Texas. Agency staff conducted a nationwide review of telecomputing networks, telecomputing hardware, software, and training. The telecomputing network reviewed included: proprietary networks such as GTE, CompuServe, AT&T, AppleLink, America On-line; statewide networks such as Pennsylvania's PennLink, Florida's FIRN, Virginia's VA.PEN; and, other "grass roots" networks like FrEdMail and

K12 Net. In addition, input was solicited from teachers, administrators, the regional educational service centers, and the educational organizations that had been utilizing the TEA-NET network.

National initiatives were reviewed. On December 9, 1991, the High-Performance Computing Act was signed into law. The act called for the development of the National Research and Education Network (NREN). This network would give rise to hope that a national education network could be established upon Internet protocols. Senator Al Gore felt this could aid in school reform when he stated:

> "This network could revolutionize American education as well, as giving teachers new tools and new ways to inspire their students. Today, hundreds of elementary and secondary schools are linked to the NSFNET, enabling students to exchange messages with other students throughout the country and enabling teachers to share new teaching ideas with one another." (Gore, 1991).

The review of existing and proposed networks resulted in the formulation of three essential requirements:

- Network standards which would allow this network to scale as growth and new advanced technology demanded.
- Network standards based upon TPC/IP and OSI protocols to permit interoperability between networking systems.
- Network standards for UNIX-based operating system to permit multi-tasking for educators utilizing the system.

Following a Request for Proposal (RFP) process, which did not result in an award, the staff met with staff at the University of Texas system to consider using the Texas Higher Education Network (THEnet) as the network carrier. With an awareness of the national networking initiative and an analysis of the available networking alternatives, it was decided that an approach based upon interagency contracts with The University of Texas system for telecommunications services was the option which would realize both the most cost-effective system and increased services to Texas K-12 students and educators.

Accomplishments April 1991- August 1992

Establishment of the Network

In April 1991, the Texas Education Agency initiated an interagency contract with the University of Texas to provide networking services for the Texas Education Network. THEnet, currently providing connectivity to the majority of the major post-secondary institutions in the state, is a National Science Foundation (NSF) regional network connected to thousands of other networks worldwide through the Internet. Analysis of the available networking alternatives showed that an approach based upon interagency contracts with The University of Texas system for telecommunications services was the option which would realize both the most cost-effective system and increased services to Texas K-12 students and educators. Several other states including Virginia, California and Florida were considering adopting similar models to bring connectivity to their public school educators.

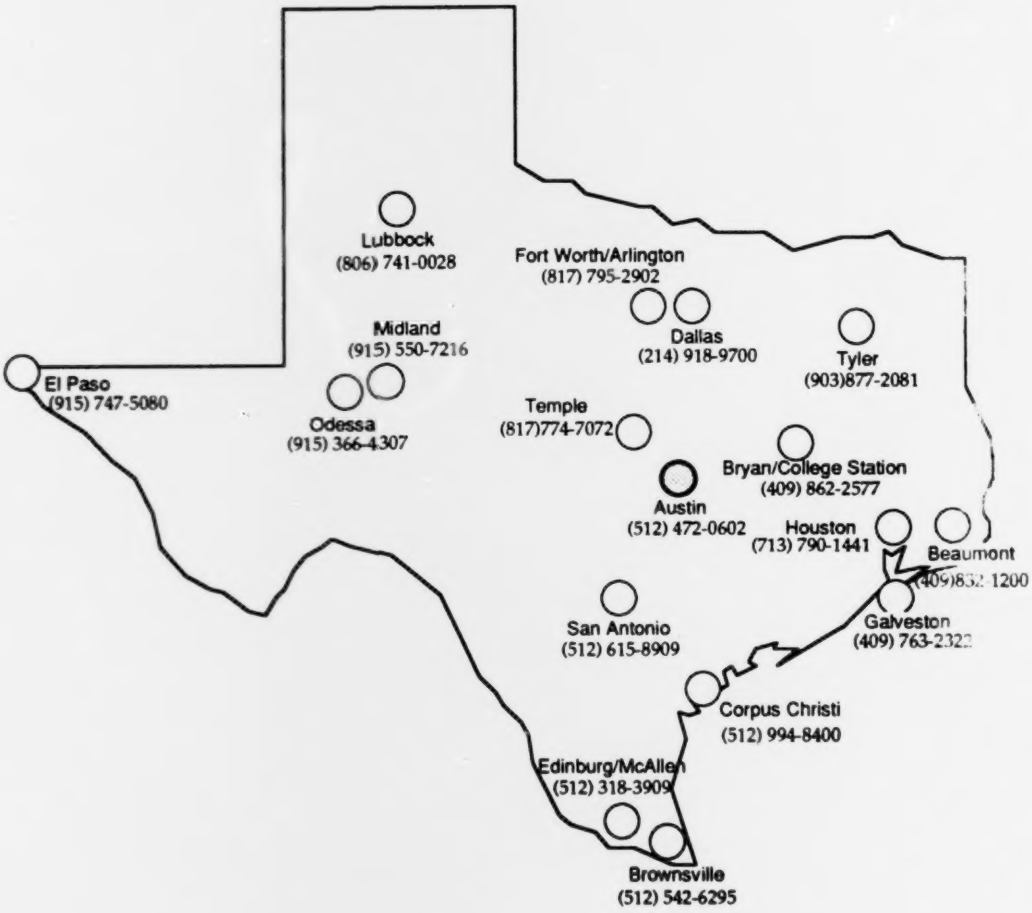
The Texas Education Agency contracted with the Texas Center for Educational Technology (TCET) to develop appropriate training on the use of the network. During the spring and summer of 1991, the equipment was installed and training initiated on the network. In August 1991, the agency implemented the electronic information transfer system (EITS), now referred to as the Texas Education Network (TENET). This network currently provides electronic connections to the agency, regional education service centers, professional organizations, other state agencies, and all school districts.

Network Configuration

The configuration of TENET is based upon a distributed design. The local hosts are a series of message processing and storage units (MPS) which are UNIX computer systems with 24 megabytes of memory, 1 gigabyte of disk space, and backup tape. The University of Texas System Office of Telecommunication Services houses the computer systems. Local phone access is provide in seventeen (17) sites across Texas. A toll-free 800 line service is provided in Austin for districts outside the local phone area as shown in Figure 1 on the following page. As the traffic increases on the network, local access will be expanded through additional nodes. Utilizing THEnet also recognizes and supports national efforts to link post-secondary education with pre-college education and offers the potential for expanded access and extended services over the network.

By contracting with the existing distributed network of The Higher Education Network (THEnet), public school educators are brought onto an electronic network with rich resources which include on-line library catalogues, educational computer archives, public databases, and instructional hypermedia libraries.

Statewide Electronic Information Transfer System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(214) 918-9700
Tyler
(903)877-2081
El Paso
(915) 747-5080
Odessa
(915) 366-4307
Temple
(817)774-7072
Bryan/College Station
(409) 862-2577
Austin
(512) 472-0602
Houston
(713) 790-1441
Beaumont
(409)832-1200
Galveston
(409) 763-2322
San Antonio
(512) 615-8909
Corpus Christi
(512) 994-8400
Edinburg/McAllen
(512) 318-3909
Brownsville
(512) 542-6295

○ TENET local dial-in areas

● TENET local dial-in areas with computer nodes

Figure 1
Texas Education Network (TENET) Dial-In Pool Locations

Training and Support

Forty (40) Texas educators, representing a broad range of expertise, were selected as TENET Master Trainers. In August 1991, they received training in three areas: use of the network, conference moderation, and curriculum integration.

Twenty (20) of the trainers were from each of the regional educational service centers. The other twenty (20) trainers represented school librarians, math supervisors, computer coordinators, and representatives from professional organizations such as the Texas Computer Education Association (TCEA), the Texas Association of School Boards (TASB), the Texas Association for Supervision and Curriculum Development (TASCD), and the Texas State Teachers Association (TSTA). Training on the Texas Education Network (TENET) is now being conducted statewide through the twenty (20) regional education service centers through a training-of-trainers model.

The Computation Center of The University of Texas at Austin provides help desk services for the K-12 education community in the use of TENET. Applications on the system are designed and implemented by The University of Texas System Office of Telecommunication Services in cooperation with the Texas Education Agency.

The process of authorizing regular teaching permits was moved to regional education service centers on August 1, 1992 to provide better service to school districts. School districts now have a regional representative to call for assistance and information about permits and they can expect permit letters to be generated more quickly.

Regional education service centers log on to the Texas Education Agency mainframe via TENET, an existing communications link, to process teaching permits, print permanent and temporary permit letters, and query the license history of teachers. They can also use TENET in the menu mode for other purposes such as electronic mail and bulletin boards.

TENET Basic Components and Services

The University of Texas, Office of Telecommunications Services designed a menu system for TENET where educators are offered a variety of services that they can access using their computer, modem, and communication software with VT 100 terminal emulation. The basic components of the TENET network include electronic mail, news and conferencing, and access to databases. Because TENET is a sub-network of the THEnet, educators are provided with full Internet capabilities. These services include Telnet, the capability which permits educators to remotely access other computers on the Internet, and remote file transfer—ftp, the capability which permits sharing computer files across networks.

Electronic Mail—The first function available is electronic mail. For this service, TENET supports Pine 3.0, designed by the University of Washington. Pine, a menu driven mail system, has many features which the educators enjoy. These included filing mail in folders, creating mail aliases, personalizing mailing lists, importing and exporting files, supporting mime, and permitting files to be attached. The text editor, Pico, was considered very user-friendly.

News—To provide educators an easier way to manage news and conference items, TASS was selected as a news reader. Access to a wealth of resources was a first consideration of the network. The Internet has the ability to share news-feeds throughout the many networks via USENET software. By using this ability TENET was able to access a number of resources. A critical need of educators was the express ability to receive time sensitive news. To address this need, TENET contracted with Clarinet for UPI news-feeds. In addition, Texas educators received news from UNnews. Other national resources available via news-feeds are the CNN Daily Lesson plan and Newsweek guides. Resources include access to the McDonald Observatory's Stardate, NSF's Geometry Forum, the Texas Parks and Wildlife Fishing Report, and a number of listserv conferences such as Kidsnet and a listserv, discussing the appropriate use of Texas Instruments graphing calculators.

Conferences—TENET also supports Texas-specific conferences. Some of the conferences have been established by various professional groups. This has allowed colleagues throughout the state to share common interest. However, all of the TENET conferences are moderated by educators. A conference moderator is able to create an environment for learning and a place where network etiquette can be established. All of the educators functioning in the role of a moderator on TENET receive training to assist and guide conference participants as they begin to explore the use of telecommunications. Conferences are established based upon request by Texas educators. These conferences are subject- or area- specific. Areas such as science and outcome-based assessment permit practitioners within the state to participate in direct dialogue with decision-makers. This feature provides them a voice in how educational policy is shaped.

Internet Access—Another area on TENET permits educators in Texas to have access to the resources on the Internet. Accessing the Internet has been compared to trying to take a sip of water from a fire hydrant. The TENET menu allows a short list of what has been identified as some as the most valued resources on the Internet for educators. By selecting a menu item, TENET customers can access NASA's Spacelink at the Marshall Space Fight Center in Huntsville, Alabama or the Underground Weather at the University of Michigan. Other resources have been added as customers and the TENET Master Trainers identify what the majority of the community would like to access.

Directory—Finding other colleagues on the network has been given priority. Teachers are able to access the directory and locate other educators on the network. For those who choose, they can list themselves in Directory Assistance. Educators feel it is very important to be able to locate colleagues and others who share common interest.

File Transfer—The File Transfer area of TENET permits the practitioner to download specific files. For instance, the file which contained the form that districts needed to submit for the Technology Allotment Fund was placed on TENET. The LOTUS© spreadsheet which permitted districts to calculate the estimated state aid was also placed on the network. The TENET manual was also provided to network users in the same fashion.

Options—An option was also provided for TENET users to change their passwords, select a mail reader, or view their personal files stored on the network. The final option was established to permit specialized information databases. The Texas Association of School Boards has an area for legislative bill tracking. Utilizing this feature has enabled districts throughout the state to track bills as they move through the legislature. Because Texas provides a site license for Grolier Encyclopedia to its clients, the network provides such information resources as Groliers, an EPIE data base of software, ERIC digest, and Project Gutenberg.

Cost—The benefits of the electronic network extend beyond just electronic mail and computer conferencing. The network supports collaboration between K-12 educators and post-secondary educators. For a nominal fee of $5 per year and no on-line cost, Texas administrators and teachers have the capability to extend their communication to thousands of educators and students throughout the United States and countries around the world. By using the TENET network, not only are they able to utilize many major university libraries such as the University of Texas, Texas A&M University, University of California, University of Hawaii, and University of Colorado, but they also have access to resources such as NASA's Spacelink in Huntsville, Alabama. By utilizing NASA, teachers are able to communicate with astronauts and scientists as well as retrieve classroom materials for their own use. In addition, the network also features a study skills guide and a software selection guide.

Gateways—The capabilities of the TENET network also include electronic mail gateways to many other major networks. Some of these networks include AppleLink, CompuServe, MCI mail, AT&T mail, FrEdMail and Fidonet. These capabilities are available to Texas educators without an additional charge.

Growth of TENET—The growth has been exponential as reflected in Figure 2. The earlier anticipated population of 3,000 was surpassed within the first three months. By August 1992, after one year of operation, more than 12,000 users have registered with a TENET account. Eighty percent (80%) of those users are K-12 educators. Of those, the majority are administrators, coordinators, or librarians. The largest population growth at this time is seen in classroom teachers. TENET is averaging 80,500 logins per month by its users and more than 1,000 new users apply for an account each month.

There has been a steady increase in network usage. When the capability for teachers to add classroom accounts to their own account becomes available, it is anticipated that the network will experience another period of exponential growth.

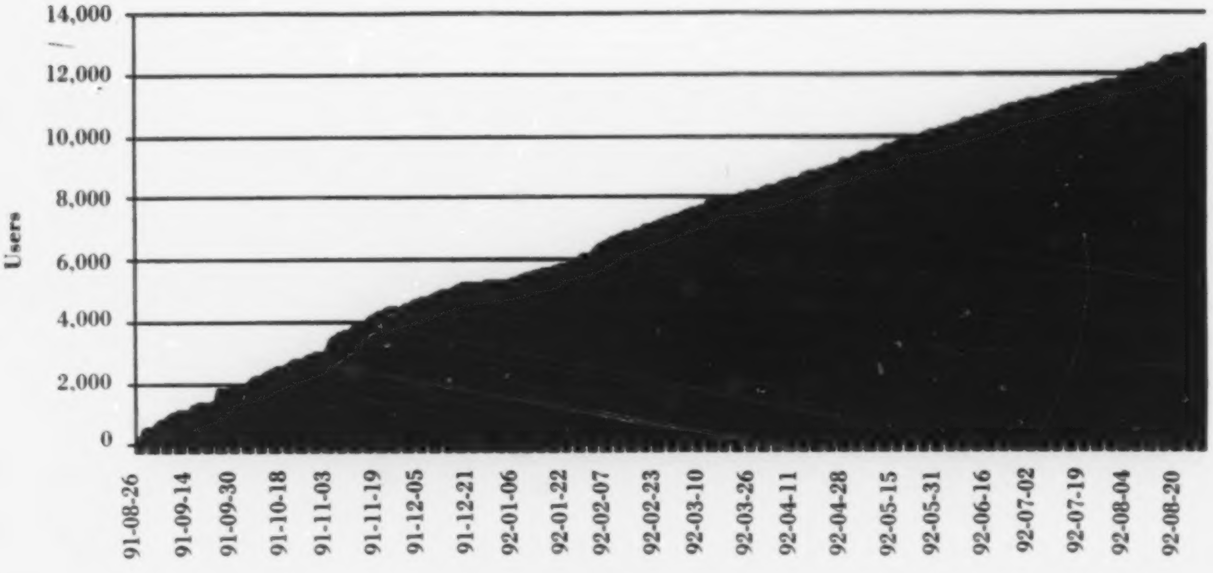

FIGURE 2
TENET Growth (1991 - 1992)

Usage Study—A study of the network use has been revealing. Within the first few weeks more than 500 educators requested accounts on TENET. At its peak, The Electric Pages served administrative offices in about 560 school districts. Within the first three months, more customers had registered for accounts on the network than had been estimated for the first year. The usage study revealed the login rate declined on the weekends, but did not drop completely off the chart. It was easy to recognize the first Thanksgiving holiday as teachers went home for vacation. Once the first winter holiday approached, it was anticipated that the network use would drop dramatically, if not all together. However, even on December 25, 1991, more than 500 educators logged on TENET. An interesting peak occurred in late January when coaches were able to receive redistricting alignment through access to TENET.

The technology has enabled teachers to communicate with one another. It was interesting that a statewide network opened communications patterns not yet realized before. Teachers have been traditionally isolated from their colleagues even though they were in the same building. It was realized that electronic communications was just as important, if not more important, for educators down the hall from each other to communicate with each other over a network.

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Phase 2
1992 - 1996

The key state action and expected outcomes, as outlined in Phase 2 (1992-1993 through 1995-1996) of *The Long-Range Plan for Technology*, focus on the continued development and support of statewide initiatives implemented under Phase 1 of the plan. Moreover, these actions have been integrated into The Strategic Plan for Information Resources Management (FY 1993-1997) and *The Agency Strategic Plan for 1992-1998*.

PROPOSED ACTION

Continue Expansion of Statewide Electronic Information Transfer System

The Long-Range Plan for Technology proposed the creation of a statewide electronic information transfer system (EITS) to facilitate information exchange by providing to each district the hardware, software, limited on-line access time; and training on the use of the system. The enormous demand for communication access has revealed a need for enhanced local communication within districts as well as communication between and among educators. There is a need to investigate a means to continue the expansion of the communications infrastructure for Texas schools which will support the larger population of Texas educators.

Goal
Phase 2

☐ Develop a means to help facilitate the expansion of the Texas Education Network to foster enhanced communications which will support the larger population of the educational community.

Expected Outcomes
Phase 2

- Initiate a communications study to develop recommendations for appropriate use of communication technology within schools.
- As a result of the communication study, develop a series of recommendations for school districts to address connectivity issues of linking local area networks and wide area networks.
- Initiate a series of mini-grants for teachers and administrators to develop applications for use with the wide area network.
- Expand the population of educators using the network to 25,000 by August 1993.
- Explore new and expanded uses of TENET.
- Expand the use of TENET to incorporate more administrative functions.

INTEGRATED TELECOMMUNICATIONS SYSTEM

PROPOSED ACTION

Expand Integrated Telecommunications System

The Long-Range Plan for Technology focused on the expansion of telecommunications by enabling schools to equitably access distance education and other information transfer services to help assure excellence in Texas school programs. The plan was to provide school districts with facilities and training necessary for receiving, using and exchanging curriculum courses, supplemental instruction, inservice, technical assistance, parent and community education, and other information. Electronic delivery of software to districts will become more feasible with the implementation of the integrated telecommunications system (ITS) which will link all entities of the public education system.

Accomplishments November 1988-March 1991

Senate Bill 650, passed during the Regular Session of the 71st Legislature, included a provision, now codified as Section 14.043 of the Texas Education Code, authorized expansion of telecommunications services for the public school system. In May 1990, the agency entered into a contract with CyberLink Corporation, a telecommunications engineering firm, for a study of the public school system telecommunications environment. Analyses completed during this study resulted in a recommended five-year plan adopted by the State Board of Education in February 1991 for implementing the integrated telecommunications system. The program to implement that plan and other activities was designated as Texas School Telecommunications Access Resource (T-STAR).

An ambitious five-year plan envisioned in 1990 was part of a total program to implement an integrated telecommunications system (now named T-STAR) for the public schools. The five-year integrated telecommunication system plan had four major phases for implementation by the end of 1995. It focused on expansion of school system capabilities to access telecommunications satellite services because such services could be provided equitably statewide more quickly than other extant telecommunications methods at reasonable costs and would not be as prone to escalating costs over the decade. The planned implementation was based on a relatively quick installation and operational mode for a basic communications backbone connecting all public school districts in the first three to four years with refinements and improvements for local networking in later years.

The 1990 reports prepared by CyberLink Corporation investigated existing and planned telecommunications systems and made a series of recommendations regarding the telecommunications configurations most appropriate for linking all Texas school districts, considering desired services, geographic and demographic character of the state and its public school system. Also included was an overview investigation of remote electronic printing as a future use of a satellite network.

The five-year master plan for implementing the integrated telecommunications system envisioned a satellite-based system for delivery of analog and digital services to and among school districts, augmented and expanded through terrestrial and other transmission media within regions and school districts. Over a five-year period the plan called for approximately 1,000 television receive-only (TVRO) satellite dishes and 700 very small aperature terminal (VSAT) systems (digital send-and-receive satellite terminals) to provide schools access to a wide variety of public and private information services. Phase 1 of the T-STAR program was to provide equipment, installation and training to approximately 200 districts and all 20 regional education service centers. Necessary satellite transponder and earth station uplink time for school information exchange, lease of digital network facilities and traffic management were required if the system as envisioned was to become operational.

According to the plan, both TVRO and VSAT components were to have been fully implemented in four phases by 1996. Authorization from the Department of Information Resources (DIR) was received to begin only implementation Phase I for the TVRO analog video plans; the digital services plans for VSATs were delayed pending further study.

In February 1991, the State Board of Education authorized the commissioner of education to enter into contracts for essential equipment and services for Phase I implementation of the TVRO plan. Priority for equipment awards and limited associated services were to go to districts that met the application criteria which by law included a preference for school districts with limited financial resources.

In addition to the CyberLink plan for facilities development and expansion, the T-STAR program plan called for expansion of school district user skills on telecommunications services and development of educational and information services delivered via satellite and other telecommunications means. The program plans addressed the need for acquisition and development of telecommunications services, to include video programming created and supported by the agency. Such services were to be focused on inservice and technical assistance as well as needs identified by schools, regional education service centers, public broadcasters and universities.

Accomplishments April 1991-August 1992

The T-STAR program continued the process of implementing the activities recommended for Phase I, initially scheduled for completion in 1991. Authorization from the Department of Information Resources (DIR) was received to begin Phase 1 for the TVRO analog video plan. The digital services plans for VSATs were delayed pending further study. After May of 1991, the original target of 150 site installations was expanded to 250 because funds proposed for VSAT sites were then converted to support TVRO sites. Bids were released and a contract signed with United Satellite Systems to procure and install the analog video and interactive audio equipment (TVROs) in districts and regional education service centers.

By August of 1992, approximately 45 TVRO systems had been installed by the contractor. Nine project management meetings on the TVRO installations were held at selected regional centers for approximately 400 district personnel and 45 regional personnel.

Other important activities included preparations for eventually uplinking to a satellite. A contract to upgrade the agency video production and broadcast capabilities was completed. As a result, the agency's capabilities for producing high quality video products and live teleconferences was significantly improved. The studio was also designed to become a T-STAR network delivery point to serve other units of the public school system. Once broadcast capabilities are acquired, agency informational services can be delivered statewide to all schools simultaneously, thus reducing travel costs and some telephone and printing expenses while providing school staff development and orientation.

A contract was also made with the Region XX Educational Service Center (ESC) to train at least two trainers from other regional centers to assist districts in operation of their T-STAR TVRO systems. These trainees, as part of a planned continuing training and local support program for distance learning and other telecommunicated services, then began consultation and training of district personnel involved with T-STAR satellite receiving sites.

A contract was also completed with the Region IV ESC to deliver TAAS remediation instruction statewide via satellite service to students in need. This contract, initiated through the Commissioner's office, delivered previously tried TAAS remediation instruction to students across the state via facilities and talent of Region IV ESC, Houston, and TI-IN, a private distance learning service provider headquartered in San Antonio. T-STAR program funds and the contract which was administered through the Department of Curriculum and Assessment, led to the participation of 4,032 students in 88 hours of math and language TAAS remediation.

A contract was also completed with the Region XIII ESC for a cooperative endeavor by all 20 regional education service centers and several Texas PBS broadcasters to support training for teachers, librarians and parents on how to use selected children's television programs to improve early childhood reading skills. This contract supplied the training materials necessary to support the activities which were to be conducted by ESC and PBS staff.

T-STAR continues to follow the original five-year plan recommendations of the CyberLink studies, though there are significant reasons to redefine the goals. The projected level of fiscal support has reduced significantly the number of districts which are awarded the equipment. An adequate level of training for users is possible with the current level of funding. Current levels of T-STAR funding will significantly reduce planned expansion of the amount of school services to be delivered via telecommunications.

Phase 2
1992 - 1996

The key state action and expected outcome, as outlined in Phase 2 (1992-1993 through 1995-1996) of *The Long-Range Plan for Technology*, recommend the continued development and expansion of the integrated telecommunications system as a means of delivering instruction, information, and training. This action has been integrated into *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998.*

PROPOSED ACTION

Expand Integrated
Telecommunications
System

Expand integrated telecommunications systems (T-STAR), including public broadcasting, to support increased delivery by distance of approved coursework for credit, supplemental instruction, inservice, technical assistance information and PEIMS data.

Goal Phase 2

☐ Expand the telecommunications capabilities of all public schools and support agencies to access and use courses of study, curriculum materials, information services, inservice opportunities and other services which are available via telecommunications.

Expected Outcome Phase 2

■ Communications and information and data exchange among education entities in Texas will be rapid and efficient.

STANDARDS

PROPOSED ACTION

Create Standards

The Long-Range Plan for Technology addressed the need for standards governing various aspects of the integrated telecommunications system (ITS), such as equipment specifications and quality of products, in order to ensure that the objectives of the system were met.

Accomplishments November 1988-March 1991

T-STAR, the program to implement an integrated telecommunications system, adhered to national telecommunications standards and those established by the Department of Information Resources. In cases where standards are not established by national committees or common practice, T-STAR uses technical standards which allow interconnectivity among telecommunications systems. In the case of the integrated telecommunications system (ITS), de facto standards for TVRO equipment for schools were established by the agency through the results of competitive acquisition processes for the TVRO systems and by virtue of using existing national standards long established for television transmission. No standards were set regarding digital transmission via satellite because no VSAT implementation plan was initiated. However, national standards for digital services would have been used, such as X.25, CCITT standards for compressed video and other recognized standards.

Service and quality assurance standards in the area of distance education were established in the 1985 Texas Education Agency document, *Guide to Distance Learning as an Alternative Delivery Procedure*. To offer courses for credit, providers of distance education services must be approved by the agency and must follow the standards detailed in that publication.

Accomplishments April 1991-August 1992

No new standards were addressed by the T-STAR program during this period.

STATE LICENSING AND ELECTRONIC DELIVERY

PROPOSED ACTION

Investigate State Licensing and Delivery of Software

The Long-Range Plan for Technology recommended that state licenses for software and courseware be investigated and implemented, if appropriate. Electronic delivery of software to districts for preview and instructional usage was also to be considered if appropriate.

Accomplishments November 1988-March 1991

Electronic delivery of software to districts will become more feasible with the implementation of the integrated telecommunications system (ITS), which will link all entities of the public education system. The T-STAR integrated telecommunications system plan for VSAT services was delayed pending further studies by TEA. This prevented an all-format information delivery network from being developed since only analog television was planned to be delivered by the TVRO network. As a result, the delivery of software to districts, the mass distribution of printed matter and data exchange could not be accomplished. The agency, while continuing to pursue the VSAT studies and pursuant to DIR decisions, may also investigate options for use of the TVRO network to deliver software and other digital information to all districts and possibly to educational service center preview centers.

In the interim, the agency has provided funding for technology preview centers to be located in each regional education service center. These centers would, among other things, serve as points of distribution for software, courseware, and electronic instructional media systems for preview and testing by district personnel. The Software Advisory Committee is discussing mechanisms for placement of products into these technology preview centers and will open a dialog with providers of software, courseware, and electronic instructional media systems to determine those most practical and beneficial.

The agency video studio capabilities were expanded during this period with minor equipment improvements and cabling to expand the basic studio package completed in the former year.

Phase 2 1992 - 1996

The key state action and expected outcome, as outlined in Phase 2 (1992-1993 through 1995-1996) of *The Long-Range Plan for Technology*, suggest the expansion of the integrated telecommunications to support increased delivery of information. This action has been incorporated into *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998*.

Proposed Action

Expand Integrated Telecommunications System

Expand integrated telecommunications systems, including public broadcasting to support increased delivery by distance of approved coursework for credit, supplemental instruction, inservice, technical assistance information and PEIMS data.

Goal Phase 2

☐ Facilitate delivery of software and other information rapidly and equitably to public schools.

Expected Outcome Phase 2

■ Communications, information and data exchange among education entities in Texas will be rapid and efficient. Delivery of computer software and informational/instructional products directly to T-STAR equipped school sites via satellite will be routine and cost effective.

INSTRUCTIONAL TELEVISION ALLOTMENT

Proposed Action

Establish Instructional Television Allotment

The Instructional Television Allotment envisioned in 1988 was a means to ensure that all school districts receive public broadcasting and other instructional television services for supplemental course enrichment, teacher assistance, and other information.

Accomplishments November 1988-March 1991

No funds were allocated specifically for Instructional Television (ITV). Limited user districts continued to acquire ITV services through subscription paid with local funds for programming provided by Texas public broadcasting stations and others ITV providers.

The agency continued to deliver information and inservice via satellite to district personnel compliments of the TI-IN network, Texas public broadcasting stations and regional educational service centers.

In addition to traditional ITV supplemental programming and technical assistance broadcasts of the agency, districts continued to subscribe to distance education courses and inservice which were delivered primarily by national services via communication satellites. Two Texas agencies also delivered distance education courses by telecommunications means other than satellite to a limited number of high schools. An estimated 3,500 Texas students were enrolled in distance education courses offered by the five TEA-approved distance education service providers.

Those providers were:

- InterAct, operated by Region IV Education Service Center in Houston;
- TI-IN Network, a commercial enterprise originating from San Antonio, utilizing studio and uplink facilities and employees located at Region XX Education Service Center;
- Satellite Education Resources Consortia (SERC), a national group;
- Oklahoma State University's ASTS network; and,
- University of Texas Extension College's Educational Instructional Materials Center.

The TI-IN Network, a privately owned distance learning provider operating from San Antonio, donated 1.5 hours per week of television studio production, uplink and satellite time to the agency to provide technical assistance to Texas educators. The agency produced 103 live audio-interactive video programs on a variety of topics. Also, a weekly education news program "TIPS," the Texas Education Agency's Information for Public Schools, was produced for administrators, teachers, school staff, and school board members and highlighted educational information, issues and items of current interest. The technical assistance broadcasts provided information about management, monitoring, legislation, regulations, procedures, standards, policies, instructional strategies and testing. Specific topics addressed during this period included: accreditation, program compliance, student assessment, certification, teacher recruitment and retention, curriculum development, educational technology, libraries and media centers, instructional strategies, textbook adoption and Chapter 1 school improvement.

Also, in collaboration with and courtesy of the Public Broadcasting System (PBS) affiliate, KLRU-TV, the agency produced a 30-minute monthly television program, "The Texas Education Report." It was broadcast simultaneously and often repeated on all Texas PBS stations. This pre-recorded television program, targeted for members of the public, included regular interviews with the Commissioner of Education about issues before the

State Board of Education and selected videotape segments featured outstanding Texas school programs and in-studio discussion with guests from featured schools.

Action was also taken to significantly increase the availability of distance education services to Texas schools via satellite television. Phase 1 implementation of the statewide integrated telecommunications system (T-STAR) began providing equipment to districts which enabled them to choose from a wide range of telecommunicated information (including some ITV) and distance education services from national, state and regional sources.

Accomplishments April 1991-August 1992

Again, no funds were specifically allocated for instructional television although Section 14.043(c) of the Texas Education Code mentions public broadcasting systems as one type of contractor with which the State Board of Education may contract to supply programming, training, and services. User districts continued to obtain instructional television programming with local funds as available.

The agency continued to deliver information and inservice via TI-IN Network. Due to delays with the T-STAR Network becoming operational, one semester of satellite services was lost.

An estimated 4,000 Texas students were enrolled in 1991-1992 in distance education courses offered by the five TEA-approved distance education providers. Such services were acquired with local and state per student funding under the foundation school program.

The distance learning service providers to Texas public schools remained the same as in the previous period and no new distance learning service providers applied to the agency for approval to offer services.

Twenty-six (26) live audio-interactive video programs were produced during this period.

The agency continued to produce "The Texas Education Report" in collaboration with KLRU-TV and partially paid for by the Texas Association of School Boards (TASB).

The agency's T-STAR program continued using available funds from the first biennium and using a reduced level of funds for the 1991 year to provide satellite receiving equipment systems to districts which enabled them to choose a wide range of telecommunicated information (including some ITV) and distance education services from communications satellites. The agency plan for initiating its own live teleconferences over the T-STAR Network was delayed. This significantly reduced agency ability to provide teleconferenced technical assistance services to Texas educators because the time formerly available from the TI-IN Network had been significantly reduced. Some results were lower expectations for the number and rate of installation of satellite receiving systems in districts, less training in operations and use of the systems, lower scope of development and delivery of programming services, and delayed development of local telecommunications services and expanded capabilities.

Instructional television services, as envisioned in *The Long-Range Plan for Technology*, cannot be realized without significant increases in fiscal resources which can be directed to providing equitable levels of instructional television services to all schools. Annual costs for a minimum level of services, approximately four hours daily, to all schools are estimated at $2.5 million. This would mainly be through state contracts with Texas public broadcasters for programming and VHF, UHF transmission service.

Phase 2
1992 - 1996

Phase 2 of *The Long-Range Plan for Technology* proposes expansion of the integrated telecommunications system to include public broadcasting to support the continued delivery by distance. This action has been incorporated in *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998*.

PROPOSED ACTION

Continue to Utilize Public Broadcasting System

The Long-Range Plan for Technology contained no specific actions for instructional television services. However, it does contain action for delivery systems including expanding integrated telecommunications systems, including public broadcasting to support increased delivery by distance of approved coursework for credit, supplemental instruction, inservice, technical assistance information and PEIMS data.

Texas has 13 public broadcasting stations which could deliver a basic level of instructional television services to 96% of all schools if state support were directed to that end. ITV services to the remaining 5% can also be provided access by available telecommunications means although not the normal broadcast coverage of Texas public stations.

Goal Phase 2

☐ To provide all school districts a basic level of state supported ITV services each school day, primarily through use of extant public broadcasting facilities and services.

Expected Outcome Phase 2

■ Communicating, information and data exchange among education entities in Texas will be rapid and efficient. A basic level of ITV services will be equitably available to students and schools.

RESEARCH AND DEVELOPMENT

The *Long-Range Plan for Technology* recognized that advances in technology are certain but that the infusion of such advanced technologies into the educational process was not. The rapid deployment of innovative technologies into the schools was seen as essential to creating and maintaining a technology-based educational system that did not risk obsolescence of its participants and its graduates. Development of prototype products reflecting the results of research into effective use of technology in the instructional process was seen to be essential to such a rapid transfer of new technology to the educational process. Research was also seen as an essential component of effective change over time so that future decisions in the implementation of *The Long-Range Plan for Technology* could be based upon technologies and methodologies of proven effectiveness.

Four actions were proposed in the original plan to ensure that appropriate research and development activities took place during Phase 1 of the plan:

- Establish a Center for Educational Technology.
- Create technology demonstration sites.
- Survey districts annually regarding installed base of technology and plans to expand that base.
- Report progress on the implementation of *The Long-Range Plan for Technology*, with particular attention to the equity of distribution and the effect of technology upon achievement and efficiency.

The accomplishments that have been achieved during Phase 1 of the implementation of *The Long-Range Plan for Technology* for each of the aforementioned actions are addressed in the following sections of this progress report in some detail; where appropriate, the discussion of certain items has been combined. Further, each section briefly addresses the goals and expected outcomes of Phase 2 (September 1992 through August 1996) of the plan.

Establish A Center for Educational Technology

Accomplishments November 1988-August 1992

THE TEXAS CENTER FOR EDUCATIONAL TECHNOLOGY

PROPOSED ACTION

The Long-Range Plan for Technology proposed establishing a Center for Educational Technology to conduct research on the use and effectiveness of technology in the educational process.

Senate Bill 650 authorized the creation of a Center for Educational Technology and an award in the amount of $800,000 in state funds was made to establish and support initial operations of the Texas Center for Educational Technology (TCET). The provisions of Senate Bill 650 related to the Center were codified in Section 14.044 of the Texas Education Code.

Through a competitive request for proposal process, conducted during the spring of 1990, the site for the center was awarded to The University of North Texas (UNT) in Denton, with The University of Texas (UT) at Austin participating as a second-site collaborator. The State Board of Education authorized the award of the contract to the University of North Texas at the June 1990 board meeting and the Texas Center for Educational Technology began operation on June 20, 1990.

The Texas Center for Educational Technology (TCET) is defined as a research and development consortium of hardware, software, textbook, and other companies, public school districts, institutions of higher education, the agency, and interested individuals whose purpose is to create applications of existing technologies, and adapt emerging technologies in the public school system.

Membership

The membership structure for the center was designed and rules to implement this structure were adopted by the State Board of Education in March 1991. The membership structure was designed to encourage participation in the center by creating multiple levels of membership.

Contributions range from $25 for Individual Memberships to $100,000 and over for Sustaining Memberships. Partnership Memberships are available for $25,000 and Associate Memberships are $5,000.

School district memberships in 1991-1992 were based on Average Daily Attendance (ADA). The membership fee for districts with less than 5,000 ADA was $50. The membership fee for districts with ADA between 5,000 and 24,999 was $200, and the membership fee for districts with ADA over 25,000 was $300.

The 1991-1992 TCET membership statistics show that there were five Sustaining Members, five Partnership Members, six Associate Members, and 107 Individual Members. Districts with less than 5,000 ADA accounted for 215 memberships. Districts between 5,000 and 24,999 accounted for 37 memberships and districts with ADA greater than 25,000 accounted for 15 memberships. All memberships were based on annual contributions.

Governance

Rules which established a governance structure for the center were adopted by the State Board of Education in March 1991. The rules create a governance structure in which members of the governing board not specifically named in the legislation are drawn directly from the membership. In July 1991, the State Board of Education approved the appointment of the TCET governing board. The University of North Texas, The University of Texas at Austin, and the Texas Education Agency are permanently represented on the governing board with one seat each. Each Sustaining Member is guaranteed one board seat. Other membership categories nominate individuals to represent them on the TCET board. Partnership Members are represented collectively by three board members. Associate Members are represented collectively by one board member. School districts are represented by three board members, each representing a category of school districts, defined by size according to their average daily attendance. Individual Members are represented collectively by one board member. Partnership and District Members are elected for terms of one, two, or three years. These members draw lots for staggered terms. Associate and Individual Members are elected annually.

The governing board sets policy, prioritizes research and establishes planning objectives for the center. The TCET board meets quarterly to review the progress and activities of the center. An executive director is employed by the TCET board. The board approves rules for administration, operation, and management of the center. The board also reports, as directed, to the State Board of Education, the Legislative Education Board, and the governor.

Mission Statement, Parameters, and Targets

In March 1992, the Texas Center for Educational Technology governing board and staff completed an intensive strategic planning process to provide a clear focus for the use of the TCET resources. The planning team adopted a mission statement defining the TCET's basic purpose. The mission of the Texas Center for Educational Technology is to promote research and development collaboration between industry and education in order that technologies and applications can be created and adapted for integration into the public schools.

The planning team, composed of board and staff members, also set forth a list of beliefs and parameters for TCET operations. The team determined that school district and educational service center members should be paired with university and corporate representatives in the pursuit of the TCET projects, and that the TCET will not engage in projects that interest or benefit only one member of the TCET partnership. The planning team established the following outcomes as targets for the TCET activities:

- Each year the TCET annual research and development program will include significant projects, each of which will be consistent with the TCET agenda, and include collaboration among the public school community, institutions of higher education, and technology-related industries.

- By June 1993, legislation will be amended to provide continuous base funding for the TCET.

- By May 1994, the results of all the TCET research and development projects will have affected at least fifteen percent (15%) of the public school campuses in Texas.

Bylaws and Intellectual Property Rights

In May 1992, the TCET governing board approved bylaws for the administration, operation, and management of the center. The bylaws are based upon authority granted in the Texas Education Code, Section 14.044(j)(2). The bylaws were approved by the State Board of Education in September 1992.

Included in the bylaws is the Texas Center for Educational Intellectual Property/Copyright Policy. The purpose of the Intellectual Property/Copyright Policy is to encourage the center to comply to the fullest with its purpose and mission, and to ensure that the disposition of inventions and discoveries resulting from those endeavors will be made in the best interest of the public, the inventors, and the center.

Activities of the Center

The TCET conducted research in five topic areas specified in the Texas Education Code, Section 14.044. These research areas are:

- applications of educational technology designed to improve the quality and efficiency of the educational process;

- new applications of technologies specifically designed for educational purposes;

- computer-based methods for diagnosing students' learning methods;

- prototypes of technological devices for handicapped students and teachers; and,

- prototype educational applications of a technology originally developed for commercial or other purposes.

Since the opening of the center, more than 100 specialists have contributed to the TCET laboratory activities conducted in the five topic areas. Results of the studies of these specialists' activities have produced the following for Texas educators:

- 43 products, such as *The K-12 Planning Guide for Videodisc Usage, the Educators' ILS Assessment and Evaluation Kit, and Packet Radio: An Educator's Alternative to Costly Telecommunications*;

- 42 articles published in journals and periodicals such as "The Computing Teacher," "Educational Technology," "Hypermedia and Multimedia in Schools," "Electronic Learning," and "The Journal of Educational Technology Research";

- 96 conference presentations at state, national, and international conferences. Examples of conference presentations include the Texas Computer Education Conference (TCEA), the International Society for Technology for Education (ISTE), the National Educational Computing Conference

(NECC), the American Education Research Association (AERA), the International Conference on the Learning Sciences, and the International Conference on Technology in Education in Paris, France;

- 20 hands-on workshops conducted at the 20 regional educational service centers to assist districts in developing technology plans; and,

- 4 special residential summer institutes held addressing topics such as telecommunications, process writing, and integration of technology across the curriculum.

Detailed descriptions of the TCET activities can be found in the TCET annual report.

District Memberships

To help fulfill the mission of the Texas Center for Educational Technology, a closer working relationship between the TCET and school districts was necessary. In an effort to promote this relationship, as of September 1992, all Texas public schools automatically received free TCET memberships. Through this membership, it was hoped that districts would play a more active role in the center's activities. Some of the direct benefits for districts included:

- opportunity to purchase over 40 technology-related products at cost (i.e., research reports, videotapes, and software);

- opportunity to electronically access monthly summary reports on a variety of topics related to educational technology;

- opportunity to decide on the TCET research projects through governing board memberships (three district seats) and through surveys and attendance at research focus group meetings; and,

- actual participation in research activities designed to assess the effectiveness of various technologies in education.

Access to Research and Dissemination of Information

Districts are now able to receive the TCET materials through TENET access. Examples of such materials include: abstract of research articles in the areas of curriculum and instruction, hardware and software developments, grants and funding sources. Districts may access information regarding the TCET such as TCET research reports, the annual report, and announcements by the TCET. A catalog listing the products produced by the TCET is also available on TENET. In addition to a catalog listing, districts are able to down-load many products.

All 20 regional education service centers are actively involved with the TCET. Each ESC serves as a disseminator of the TCET materials not available on TENET.

The regional education service centers are responsible for providing the following services in support of the TCET:

- dissemination of information from the TCET to districts;
- information on identification and design of research/development projects;
- opportunities for participation in the TCET research/development projects as appropriate; and,
- opportunities for training resulting from the TCET projects.

Research Agenda

In the fall of 1992, the TCET staff members and the Executive Director met with representatives from business, industry and higher education to establish the annual research agenda for the TCET. The outcome of this meeting resulted in a Request for Proposal (RFP) that addressed two areas for research. The established topics were: Teacher Training and Preparation, and The Impact of Technology on Learning.

At the close of the proposal period, 11 proposals were received at the Texas Center for Educational Technology. Proposals were received from researchers at Texas A&M University, Texas Tech University, The University of Houston/Clear Lake, The University of North Texas, and The University of Texas at Austin. As stated in the RFP, all proposed projects were to be collaborative in nature and to include participation of local independent school districts and regional educational service centers. All proposals had to be compatible with the TCET stated mission, targets, beliefs, and parameters. Proposals were evaluated by teams comprised of educators, university faculty, and corporate leaders. Descriptions of proposals receiving funding are found in Phase 2 Goals and Expectations, page 87 of this report.

Funding

Since the creation of the Texas Center for Educational Technology through August 1992, the center has received a total of $2.5 million dollars from diverse sources. Agreements between the Texas Center for Educational Technology and the Texas Education Agency account for $1.37 million of the total. The center received an initial interagency contract for $800,000 for start-up activities. The third year of legislative funding for the TCET totaled $400,000. Funds received from the Technology Allotment allocated to the TCET for FY 1992-1993 amounted to $500,000. The remainder of the interagency contracts were for the development of master training materials for users of the Texas Education Network (TENET) and for data analysis.

More than $575,000 or twenty-three percent of the total $2.5 million received through August 1992 consisted of private sector contributions. Examples of private sector contributions included in-kind donations such as computer laboratories, multimedia-based courseware, productivity software, and laserdisc players.

The TCET host universities donated $200,000 of the total contributions. The contributions were donated in the form of space, overhead costs, personnel, and other forms of in-kind services.

TCET consulting services to private companies, school districts, and universities generated approximately $135,000 of the total revenues. Examples of these services include creation of guides and instructional kits for technology implementation and sponsorship of technology contests.

Cash received through contributions, membership fees, and royalty payments brought the center $97,000 of the total revenues during this period. These general funds were used to support the mission of the TCET.

Funding for the continued support of the Texas Center for Educational Technology is essential. The ability of the center to attract sufficient corporate resources to become self-supporting over the long-term remains unknown. The experience of other such entities suggests that continued existence of the center will require continued availability of state funding to support center operations. The State Board of Education and the House Committee on Science and Technology have recommended that the prohibition on funding, as stated, be eliminated.

Phase 2
1992 - 1996

Goals
Phase 2

The Center for Educational Technology will continue to conduct research on the use and effectiveness of technology in the educational process.

☐ Report research findings from research conducted at various universities. During 1993, the projects that received TCET funding will conduct research in the following areas:

- Texas A&M University—Research will be conducted to create a prototype CD-ROM curriculum delivery system. A study will be conducted to examine teacher response to an alternative curriculum delivery system.
- Texas A&M University—This research focuses on using site-based telecommunications to enhance communication and practice by student teachers and their supervisors.
- Texas Tech University—A research study is being conducted on distance education and the instructional techniques that are most effective in distance education programs.
- University of Houston/Clear Lake—The research undertaken at this site will analyze the impact of student-centered multimedia on communications and problem-solving skills.
- University of North Texas/University of Texas collaborative—This research study deals with a variety of telecommunications and informatics technologies on learning. Included in this study is the development of an Electronic Emissary. This proposes a means for individuals working in different disciplines to locate information and contact each other on the Internet.
- University of North Texas—The research study proposes to produce an annotated listing of Internet resources available for K-12 education.
- The University of Texas at Austin—"Knowledge-Building Communities," This is an effort to use networked computers and collaborative learning software tools, telecommunications, and distance learning to help students actively construct and develop their knowledge of the world.

- ☐ Collaborate with Centers for Professional Development and Technology and other entities to conduct additional teacher training and staff development such as summer institutes.
- ☐ Restructure center membership rules to allow small businesses admission to the center and to continue to provide free memberships to all public school districts.

Expected Outcomes Phase 2

- The TCET will produce an annual report detailing the research findings for submission as required to the State Board of Education, the Legislative Education Board, and the governor's office.
- The TCET will post research findings on TENET for equal access by school districts.
- More teachers will have access to training and development in the use of technological tools. This should increase the infusion of technology into the classroom at both the preservice and inservice levels.
- A restructured membership will increase the number of resources available to the center for use and it will allow all districts more equitable access to TCET products and services.

TECHNOLOGY DEMONSTRATION PROGRAMS

PROPOSED ACTION

Create Technology Demonstration Sites

The Long-Range Plan for Technology called for the establishment of multiple demonstration programs of varying duration and dissemination of results as appropriate.

Accomplishments November 1988-March 1991

In 1989, the 71st Legislature authorized the creation of demonstration programs in Senate Bill 650, later codified as Section 14.045 of the Texas Education Code. Appropriated funds in support of Senate Bill 650 supported an allocation of $600,000 for the demonstration programs. These technology demonstration programs were established to examine the application and use of technology-based or technology-enhanced instructional delivery systems in different content areas and at different grade levels. The available funds were distributed to districts on the basis of competitive applications submitted by districts; these applications describe the proposed project, itself, as well as the outcomes each district expected as a result of the project. Sixty-one (61) applications were submitted. The evaluation process resulted in the funding of eight demonstration projects at districts across the state; those awards were made in January 1990.

The funded projects vary widely and include the application of technology to student learning, instructional delivery, and classroom management. A broad range of participants and locations are also represented in these demonstration programs; students, teachers, and parents all participated in these programs which are located on early childhood, elementary, middle, and high school campuses. Student participants range from prekindergarten students to graduating seniors. In their limited operation during FY 1990, these programs involved 1,069 students, 130 parents, and 54 educators. Those districts which were awarded a demonstration program, and the key descriptors of their programs, are listed below:

- Harlingen ISD, Harlingen
  Math/Take-Home Computers/Telecomputing
- Hurst-Euless-Bedford ISD, Bedford
  Teacher Productivity/Empowerment
- McAllen ISD, McAllen
  Reading/Higher Order Thinking Skills/Take-Home Computers
- Mesquite ISD, Mesquite
  Science/Math/Logo/Writing/Robotics
- Pottsboro ISD, Pottsboro
  Take-Home Computers/Telecomputing
- Somerset ISD, Somerset
  Restructured Elementary Day/Differentiated Staffing/At Risk Students
- Temple ISD, Temple
  Science/At Risk Students
- West ISD, West
  Writing/Telecomputing/At Risk Students

The first year outcome evaluation data from these demonstration program sites were published in January 1991. Although the data were sparse because of the limited amount of time the demonstration programs had been operational, demonstration pilot staff found increased student attendance, interest, and productivity associated with the new technology.

Accomplishments April 1991-August 1992

During FY 1991, there were 1,206 students, 430 parents, and 60 educators who participated in classes, training, or other organized activities as part of the technology demonstration pilots.

Technology was used to support instruction across a range of grades, from a low of five hours per week at secondary grade levels to as much as 25 hours per week in the primary grades. Similarly, the amount of time that technology was used to support professional activities ranged from approximately nine hours per week at the primary grades to one hour per week at the secondary levels.

One program focused on technology's "empowering" the teaching professional while another applied technology across the curriculum. The remaining programs targeted the technology on specific subject areas—most often language arts, reading, or mathematics but also science and social studies.

All programs reported that students used technology during teacher-led instruction, in completing independent work during class time, and outside of regular classes in campus facilities such as libraries and computer labs. Six of the programs reported that students used technology to complete assigned work while at home and four said that the educational technology enabled students to interact with sites off campus or outside of the district. Indications of students' interest in using this technology came in numerous anecdotal reports of their requests for access to computer facilities before and after regular hours, as well as on weekends.

Three programs expanded parents' access to educational technology by making that technology available outside of regular school hours and/or off of the school campus. Hence, 170 students were reported to have engaged in technology-based, structured activities with their parents while the parents of 128 students checked out computers and software from the program for use at home.

Teachers involved in these programs received over 650 hours of staff development in the application of educational technology. They most commonly used the technology to maintain student records (especially grades), to provide for individualized learning or interactive use by targeted students, and to create classroom materials.

Although districts were not required to focus their technology demonstration efforts on any particular groups of students, pilot sites were asked to report on the number of students involved in those efforts who were making satisfactory progress according to local criteria. During FY 1990, satisfactory progress was noted in 72% of students entering participating classrooms at the start of program implementation. These limited data suggested that students involved in the technology demonstration pilots had much to gain academically from any improvement brought about by the incorporation of technology into their education. Data from the FY 1991 evaluation showed that 97% of students involved in these programs graduated or were promoted. Unfortunately, whatever significance might lie in this observation was obscured by the absence of appropriate contrast groups.

It is interesting to note that during each year of program operations, mothers and fathers were involved in the technology demonstration programs in a ratio of approximately two-to-one. These results may have indicated that technology-based innovations are particularly effective at increasing paternal involvement in educational activities.

Surveys of students, parents, and teachers uncovered interesting similarities and differences in their perspectives on educational technology. At least 85% of students returning surveys felt that the technology was useful in their classroom activities and prepared them better for the future. Comments written on the back of survey forms expressed the fun and enjoyment that students felt in working with the technology. Parents likewise reported enjoying the technology and valuing its contribution to their child's current performance and future success.

Teachers' survey responses were more varied than those of students and parents. While over 70% of teachers thought that such programs were a good idea in their and others' schools, only 56% felt that they were able to use the technology to enhance their instruction during the school year while 61% judged the technology a useful tool in completing job duties. In keeping with the reported application of the technology to traditional instructional activities (e.g., creating classroom materials to support existing lesson plans), only slightly more than half of the teachers felt that the technology induced radical or substantial changes in their instruction of students.

During this phase, the pilot sites were used as models for schools exploring the use of technology. A brochure entitled "Technology Demonstration Pilot Sites" was disseminated and pilot sites were described at regional and state conferences, meetings, and workshops. All pilot sites were showcased on the TI-IN network. Each pilot site developed replication manuals to be used as guides by schools who were interested in modeling the pilot programs. In the replication manuals, pilot sites shared their experiences with technology planning, procurement of equipment, staff development, and use of the tools to meet their goals.

Phase 2
1992 - 1996

The key state action and expected outcomes, as outlined in Phase 2 (1992-1993 through 1995-1996) of *The Long-Range Plan for Technology*, recommend the utilization of the results of the demonstration pilot sites. Moreover, this action has been integrated into *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998*.

PROPOSED ACTION

Continue to Establish and Revise Technology Demonstration Programs

The Long-Range Plan for Technology called for the establishment/maintenance of demonstration programs; the use of the results to plan future legislative requests, additional and expanded demonstration programs, state standards, and regulations; and, the dissemination of information on demonstration programs.

Goal
Phase 2

☐ Utilize the data from the technology demonstration sites to provide guidance to other schools, develop standards for technology, and plan for future sites.

Expected Outcomes
Phase 2

- Successful uses of technology will be expanded statewide.
- Technology-related regulations and legislation will be based on research results.

SURVEY DISTRICTS

PROPOSED ACTION

Conduct Annual Technology Surveys

The Long-Range Plan for Technology suggested that an annual survey be conducted regarding the installed base of technology and district plans to expand that base.

Two surveys have been made of districts' installed base of technology: the first was a comprehensive inventory conducted in conjunction with the Facilities Inventory mandated in Senate Bill 1; the second survey, which was conducted by the Office for Technology in December 1991, sought to ascertain a limited amount of information regarding the administrative and instructional bases of technology in the schools.

The Facilities Inventory included a full inventory of the physical plant at all school sites as well as a technology inventory that addressed the various technologies in use in the schools such as robotics, computers, videotapes, videodiscs, and telecommunications facilities. The technology component of the inventory was prepared collaboratively with staff in the Office for Technology.

The voluntary-response survey conducted by the agency's Office for Technology was significantly more limited in scope, seeking to address specific areas of interest related to the districts' implementation of *The Long-Range Plan for Technology*. In this survey, district experiences from school years 1989-1990 and 1990-1991 were compared in the areas of overall budget, specific item expenditures, planning, and sources of both training and technical assistance. Comparisons in each of these subject areas were made for both instructional and administrative settings. The major findings from the Office for Technology survey are listed on the following pages.

- Overall District Budgets:
  - 3.5% allocated to technology
  - 2% allocated to instructional technology in 1989-1990; a slight increase noted in 1990-1991
  - 1.5% allocated to administrative technology in 1989-1990; a slight decrease noted in 1990-1991

- Item Expenditures (Instructional):
  - Over 50% in 1989-1990 allocated (Instructional) to stand-alone systems and integrated learning systems
  - 25% allocated to stand-alone workstations; a slight decrease noted in 1990-1991
  - 16% allocated to integrated learning systems; a slight increased noted in 1990-1991
  - 16% allocated to networks in both school years

- Item Expenditures (Administrative):
  - 47% allocated to stand-alone workstations in 1989-1990; a slight increase noted in 1990-1991
  - 28% allocated to mainframe computers in 1989-1990; a slight decrease noted in 1990-1991

- Planning:
  - 90% report having technology plans
  - Four areas most often reported NOT included in those technology plans are:
    - staffing and personnel
    - staff development strategies
    - evaluation strategies
    - overall expenditures

- Sources of Training and Technical Assistance:
  - 22% of training and technical assistance provided by regional education service centers
  - 21% of training and technical assistance provided by in-district resources

Accomplishments April 1991-August 1992

In reviewing district technology plans, some general trends have been noted and listed above. Overall district budgets for technology have increased with some districts matching or exceeding allotment allocations. Since at least 75% of the allotment must be used for instruction, there is an increase in the portion of the overall budget used for instructional expenditures. Many of the district plans reflect a need for assistance in staff development planning and implementation, as well as evaluation and revision of technology plans and programs. Technology plans also reflected an increase in reliance on regional education service centers for staff development and training.

Phase 2 1992 - 1996

Phase 2 of *The Long-Range Plan for Technology* proposes the continuation of annual usage and installed-base surveys. This action has been integrated into *The Strategic Plan for Information Resources Management (FY 1993-1997)* and *The Agency Strategic Plan for 1992-1998.*

Continue to Conduct Annual Technology Surveys

PROPOSED ACTION

Survey installed base of technologies and uses at the campus and district levels annually.

Goal Phase 2

☐ As part of the annual report on the technology allotment, districts will complete a campus technology workstation survey. This will enable the agency to determine progress toward the State Board of Education equipment target ratios.

Expected Outcome Phase 2

■ Further review and analysis of district technology plans, the *End-of-Year Report*, and the *Annual Update* to technology plans will provide additional information on technology expenditures throughout the state.

PROGRESS REPORT

PROPOSED ACTION

Create Timely Update Reports

The Long-Range Plan for Technology proposed that regular progress reports be made on the implementation of *The Long-Range Plan for Technology*, with particular emphasis on the equity of distribution and the effect of technology upon achievement and efficiency.

Accomplishments November 1988-March 1991

The Progress Report on *The Long-Range Plan for Technology* was prepared, submitted, and approved by the State Board of Education for transmittal to the governor and 72nd Texas State Legislature in April 1991. The report detailed the accomplishments made in the first 28 months since passage of *The Long-Range Plan for Technology*.

Two significant pieces of statute were created by the legislature which translated major components of *The Long-Range Plan for Technology* into state policy, backed by significant appropriations of public funds. These two pieces of legislation, Senate Bill 650 (effective September 1989) and Senate Bill 1 (effective September 1990 and later amended by Senate Bill 351 in April 1991), have influenced and guided the progress of all public school entities in moving toward the goals expressed in *The Long-Range Plan for Technology*.

Additionally, the first report concentrated on the state-level activities accomplished by the agency during the nineteen months since the passage of Senate Bill 650. During that period of time, much was accomplished by the agency in collaboration with many other entities.

Accomplishments April 1991-August 1992

This document is the second progress report and it reviews the accomplishments of the first reporting period and details the significant accomplishments of the last 16 months of implementation of Phase 1 of *The Long-Range Plan for Technology*.

This *Progress Report on The Long-Range Plan for Technology* is prepared in accordance with Section 14.021 of the Texas Education Code for approval and transmittal, by the State Board of Education, to the governor and the 73rd Texas Legislature.

The two years leading up to Phase 1 (1988-1992) concentrated on the design, development, and adoption of *The Long-Range Plan for Technology*. The Commissioner's Advisory Committee on Long-Range Planning for Technology and state and national experts in the applications of technology to education contributed critical technical and instructional guidance. Phase 1 of the plan marked the beginning of the implementation process as illustrated on the States of Evolution chart. (See page 4.)

Significant strides have been made toward the accomplishment of the key state actions that were outlined in the plan. Those accomplishments are highlighted on page 5 in the chart of Major Events and Accomplishments, Phase I: 1988-1989 through 1991-1992.

The intent of this *Progress Report on The Long-Range Plan for Technology* is to provide a comprehensive description of the progress made toward the implementation of Phase 1 of *The Long-Range Plan for Technology (1988-2000)*.

Additionally, this progress report will help prepare the way for the revision of *The Long-Range Plan for Technology*. The plan was developed during a period where technology was sparsely located throughout the state of Texas. Since that time, the technology has changed, educational issues are the same yet different, students and teachers have more access to the technology; and, in many ways, the role of technology in education is redefining the delivery of instruction, access to information, and staff development and training. A careful reexamination of the proposed actions for the next four-year phase will, therefore, lead to revisions in *The Long-Range Plan for Technology of the State Board of Education (1988-2000)*.

This *Progress Report on The Long-Range Plan for Technology* was developed by the staff of the Division of Technology Services within the Department of Technology Applications. The Division of Technology Services is an organizational entity created within the Texas Education Agency as a result of the adoption of the plan and the passage of Senate Bill 650.

CONCLUSION

The Long-Range Plan for Technology adopted by the State Board of Education in 1988 articulated a vision and guiding principles for the use of technology in public education. The vision and principles in that plan are now commonly shared within the public education community in Texas and remain the standard both for Texas and for the nation. Technology is one tool for increasing equity and excellence in Texas schools.

Phase 1 of the plan, now completed, has set the stage for full and effective utilization of technology in education. The intensified focus on accountability for student achievement and equity across student populations both echoes and redefines aspects of the state board's commitment to excellence, equity and accountability. Equal access to technology expressed in the plan is, with the funding of the Technology Allotment, now a more certain achievement. The increased availability of technology that will be supported by the Technology Allotment is complemented by the implementation of major statewide technology infrastructures which will span the elements of the public school system, namely TENET, T-STAR, and The Texas Center for Educational Technology. (See Appendix B.) These facilities are linking all components of the education system, from K-12 through post-secondary, one to another as well as linking those elements to the broader resources available nationally in education, research, and business.

Aspects of the instructional process have also been addressed: the use of technology both to deliver instruction and to prepare students to adapt to a technology-rich working environment. Thus, significant attention has been focused on developing computer literacy in students—from keyboarding skills in primary grades to programming and advanced analytic techniques in the upper grades—with an overall purpose of developing student skills in using the computer as a productivity tool. The focus on developing a quality curriculum has been accompanied by leadership in the use of advanced technologies in instructional delivery. The use of technology has also been extended to the very basic foundation of classroom instruction—the textbook. Texas led the nation with the first adoption of an "electronic textbook," and it continued this trend with the adoption of an "electronic instructional media system" for chemistry and for computer literacy. Now the option for submission of electronic instructional media systems is included in all textbook proclamations.

Texas classrooms are beginning to use a wide variety of technologies. Electronic textbooks, multimedia workstations, networked instructional learning systems and powerful personal computers are beginning to make sophisticated software and courseware available to students. The boundaries of the classroom are being extended by telecommunications technologies which offer rich resources to students through distance learning and computer-mediated access to on-line libraries, encyclopedias, NASA scientists and worldwide news feeds. Teachers are becoming increasingly sophisticated in the integration of technology into the curriculum, acting as mentors to students engaged in research-based student learning and product-based outcomes. The Technology Allotment and the state infrastructures established through the partnership of the state board, the legislature and the agency will continue to expand the availability of such technology-rich classrooms to students.

While the state has made significant progress and indeed leads the nation in the use of technology in education, there is much to do. Texas has worked through the easier stages of development, establishment and implementation as illustrated on page 4. The next stage that needs to be accomplished is a significant effort toward utilization. This stage is much more difficult in that it has to happen on every campus with every person so that every student will benefit. More important, and more difficult, is the need to significantly change education so that students are the true focus of the enterprise. Technology can facilitate this paradigm shift by providing students with the power to access information, and providing teachers the power to access and use information to create learning environments that are different and effective. In order to have full utilization, the state board and the agency need to focus on research, training, the full integration of technology into all parts of the educational environment, and the integration of administrative and instructional uses of technology.

Research

While there is some research of specific applications of technology in specific settings with specific students, there is little research in the application of technology to transform education. If education is to be successful in preparing students for the information age, it must change radically, and technology can be a facilitator if not driver of that change. In addition, new products, new approaches to the use of technology in education, and new partnerships in facilitating change in education must be explored. The research agenda for the Texas Center for Educational Technology is being set in this direction, yet even more needs to be done. Pockets of innovation must be fostered, studied, and disseminated.

Training

Training in various applications of technology in education is critical to ensure that students and educators benefit from the investment in the technology. The training that occurs in schools, colleges and universities and regional education service centers focuses primarily on the operation of the technology. Training in this next phase needs to go far beyond this superficial, but necessary, level. New training should address fundamental organizational and pedagogical changes in education, such as:

- What technical and higher-order thinking skills are needed as students and teachers gain access to vast arrays of information?
- What are some ways to sort and organize the information so it is meaningful to both students and teachers?
- What are some ways to help teachers facilitate their own and their students' learning as the information becomes more available?
- How does the appearance of technology in a classroom affect what is learned and how the learning experience is structured?

These are very different questions of applications of technology in education than those addressed today.

Full Integration of Technology into the Classroom

If we do not make a significant effort to integrate the technology fully, and we just put boxes into the classroom as it is today, we will gain some efficiency and some quality. We will not, however, significantly change education, raise student achievement or adequately address the equity issue. We will also lose money. Integration of the technology must occur in all aspects of the teaching and learning process. Curriculum revisions must incorporate the use of technology. The classroom as we know it today will change as technology is redefining how instruction is delivered. As the technology is fully integrated into the classroom, utilization by students, teachers, and administrators will give rise to the acquisition of a new set of technology-based competencies, new technology-based skills that students need to function in a world where technology is commonplace.

Integration of Administrative and Instructional Technology

Traditionally, the administrative applications of technology have included such functions as scheduling, record keeping, bus routes, and cafeteria information. Instructional applications have included tool use (word processing, etc.), drill and practice, and programming. Changes in the power and location of technology now allow a merging of instructional and administrative applications of technology with the result of significantly more and different information available to both teachers and administrators. Restructuring, as reflected in organizational changes, facilitates the integration of these two entities. Technology can record students' progress in specific skill areas as they work, suggest alternative pathways to learning the skills, capture the choices that students make, and provide all this information in a comprehensible form to teachers and administrators. Future technology plans will encompass the synergistic vision for the use of technology that incorporates all instructional and administrative applications in the school district.

The Long-Range Plan for Technology is in its fifth year which indicates that we must revisit the goals and objectives in light of the rapid changes in technology. Other educational issues that drive the need for revision of the plan include:

- site-based decision-making;
- closing the achievement gap between student populations;
- equitable access to information, resources, and technology;
- restructuring;
- infusion of technology into the teaching and learning process;
- merging of instructional and administrative applications of technology;
- innovative uses of technology;
- redesign of the curriculum;

- rapid emergence of new technologies;
- technology expertise of students, teachers and administrators;
- changes in the real-world expectations for high school graduates;
- new applications of technology;
- outcome-based education; and,
- performance-based assessment.

The next biennial report will include progress on the equity of the distribution and use of technology and the implementation of and revisions to *The Long-Range Plan for Technology* in accordance with Section 14.021 of the Texas Education Code.

Planning Document Hierarchy

The Agency Strategic Plan for the planning period 1992-1998 contains the following strategy: Provide appropriate technology and support services which enhance student performance and promote the effective and efficient operation of schools.

This strategy provides the foundation for *The Agency Strategic Plan for Information Resources Management* for the planning period 1993 through 1997. *The Information Resources Strategic Plan* is the bridging transitional document that will continue to merge and incorporate the goals of *The Long-Range Plan for Technology* with the goals and strategies of *The Agency Strategic Plan*.

APPENDIX A: PROPOSED ACTIONS INDEX

PROPOSED ACTIONS INDEX

Proposed Action	Statement	Page
Create Technology Equipment Allotment	*The Long-Range Plan for Technology* called for the creation of a Technology Equipment Allotment that would provide $50 per average daily attendance (ADA) per year.	12
Review District and Campus Plans	*The Long-Range Plan for Technology* called for the review of district and campus technology plans.	19
Appoint Advisory Committee on Technology Standards	*The Long-Range Plan for Technology* proposed that the State Board of Education appoint an Advisory Committee on Technology Standards to advise the board on quality, technical, functional, security, service and other standards.	21
Amend Textbook Adoption Procedures	*The Long-Range Plan for Technology* proposed that the textbook adoption procedures and rules be amended to include software, courseware, or Electronic Instructional Media Systems (EIMS).	26
Revise Curriculum Rules	*The Long-Range Plan for Technology* recommended that the scheduled review of Chapter 75 rules include revisions recognizing the importance of technology skills needed by citizens in the next century.	28
Revise Curriculum Frameworks	*The Long-Range Plan for Technology* proposed that both curriculum frameworks and course guidelines be modified as appropriate to provide information on computer-based and distance education resources, textbooks, and courseware.	29
Approve Software Advisory Committee Recommendations	*The Long-Range Plan for Technology* suggested that the State Board of Education approve specific software and courseware based upon recommendations of the Software Advisory Committee.	30
Implement State Licenses and Electronic Delivery	*The Long-Range Plan for Technology* recommended that state licenses for software and courseware be investigated and implemented, if appropriate.	35
Revise Administrator Certification	*The Long-Range Plan for Technology* recommended that standards for administrator certification be changed to include provisions reflecting the need for training in the use of technology in management and instruction.	40
Include District Planning for Technology	*The Long-Range Plan for Technology* recognized the importance of training for district staff both to help them successfully plan for technology and to help them meet keyboarding requirements.	41

Proposed Actions Index (continued)

Proposed Action	Statement	Page
Revise Preservice Requirements	*The Long-Range Plan for Technology* stated that preservice requirements should be reviewed and revised to accommodate the integration of technology into the educational process.	44
Conduct Summer Institutes	Summer Institutes were recommended as a means to train teachers in the use of technology instruction and instructional management.	47
Develop Distance Education Requirements	Certification requirements for both instructors and providers of distance education to Texas schools were proposed in the original plan.	49
Utilize Training Delivery Systems	*The Long-Range Plan for Technology* recommended that public broadcasting and other distance education delivery providers be used to train teachers and other regional and local staff.	50
Adopt Technology Standards	*The Long-Range Plan for Technology* suggested that an Advisory Committee on Technology Standards, appointed by the State Board of Education, adopt standards for workstation-based training and training materials.	53
Investigate and Implement Statewide Telecommunications System	*The Long-Range Plan for Technology* proposed that investigation of statewide telecommunications systems proceed in coordination with other state agencies and institutions of higher education.	56
Establish Electronic Information Transfer System	*The Long-Range Plan for Technology* proposed the creation of a statewide Electronic Information Transfer System (EITS) to facilitate information exchange by providing to each district the hardware, software, limited on-line access time and training on the use of the system.	58
Expand Integrated Telecommunication System	*The Long-Range Plan for Technology* focused on the expansion of telecommunications by enabling schools to equitably access distance education and other information transfer services to help assure excellence in Texas school programs. The plan was to provide school districts with facilities and training necessary for receiving, using and exchanging curriculum courses, supplemental instruction, inservice, technical assistance, parent and community education, and other information. Electronic delivery of software to districts will become more feasible with the implementation of the Integrated Telecommunications System (ITS) which will link all entities of the public education system.	68
Create Standards	*The Long-Range Plan for Technology* addressed the need for standards governing various aspects of the Electronic Information Transfer System and the Integrated Telecommunications System.	72

Proposed Actions Index (continued)

Proposed Action	Statement	Page
Investigate State Licensing and Delivery of Software	*The Long-Range Plan for Technology* recommended that state licenses for software and courseware be investigated and implemented, if appropriate. Electronic delivery of software to districts for preview and instructional usage was also to be considered, if appropriate.	73
Establish Instructional Television Allotment	The Instructional Television Allotment was envisioned as a means to ensure that districts received public broadcasting and other instructional television services.	74
Establish a Center for Educational Technology	*The Long-Range Plan for Technology* proposed establishing a Center for Educational Technology to conduct research on the use and effectiveness of technology in the educational process.	80
Conduct Annual Technology Surveys	*The Long-Range Plan for Technology* suggested that an annual survey be conducted regarding the installed based of technology and district plans to expand that base.	92

APPENDIX B: CURRENT STATUS OF STATEWIDE TECHNOLOGY INITIATIVES

Current Status of Statewide Technology Initiatives

Authorized Under Texas Education Code, Subchapter C, Chapter 14

Initiatives	Description	Purpose	Focus	Location	Hardware	Funding Level
Technology Allotment TEA Contacts: Anita Givens, Ed. Tech. Specialist Lane Scott, Ed. Tech. Specialist Karen Kahan, Ed. Tech. Specialist	Technology Allotment funds established by Senate Bill 1 during the Sixth Called Session, 71st Legislature. Funding is to be increased in $5 annual increments from $30 to $50 per student by 1997.	The Technology Allotment was established to provide equal access for students, teachers, and administrators to teaching and learning tools of high quality and information resources through the application of computers and emerging technology; and, to improve student productivity throughout the state.	Allotment funds may be used only for hardware, software, courseware, training, and related services. At least 75% of the allotment is to be used to provide classroom instructional services and programs; and, 25% can be used for administrative purposes.	90% (992 plans) of the districts have submitted five-year technology plans in order to receive technology allotment	Networked and stand-alone computers, CD-ROM and laser-disc players, modems, LCD panels, telecommunications equipment, other related peripherals, instructional software, and emerging technologies.	$30 per Student per ADA
Texas Education Network (TENET) TEA Contacts: Connie Stout, Program Director Richard LaGow, TENET Specialist	The Electronic Information Transfer System (TENET) provides telecommunications and related services to public school educators through an electronic network with resources that include on-line library catalogs, public databases, and instructional multi-media libraries.	The network provides cost-effective communications between school districts and TEA by offering the educators electronic mail, bulletin boards, computer conferencing and database access. Classroom teachers can use the network to access instructional materials to enhance classroom lessons.	Through collaborative efforts with educators in the state, the agency supports the use of telecommunications as an instructional application which extends learning beyond physical barriers and time constraints.	90% of the districts have TENET access (19,500 accounts)	Computer, modem, and a toll-free or local phone line	$1.2 M
Texas School Telecommunications Access Resource (T-STAR) TEA Contacts: Gary Haseloff, Program Director Keith Ellio, Contract Specialist	The Integrated Telecommunications System (T-STAR) is a one-way video/two-way audio communication system which provides statewide capabilities for the delivery and exchange of video and data via telecommunications satellite networks. Interactive audio allows communication among instructors, presenters, and other users during teleconferences.	T-STAR is designed to expand telecommunications capabilities of the Texas public school system. It provides districts access to distance learning courses, professional development teleconferences, instructional television, and technical assistance from a variety of service sources, one of which is TEA.	T-STAR focuses on the delivery of high quality video and data via a statewide integrated telecommunications system. Districts and ESCs will receive distance learning instruction, professional development teleconferences, training, and technical assistance from TEA.	196 of the original 251 TVRO sites have been installed in school districts and regional education service centers. 130 sites will be installed by the end of August 1993. An additional 50 sites will be installed in FY 1993.	Dual-band satellite system which includes a dish, receiver, monitor, VCR, modulator audio response units, computer, and modem	$1.5 M

Current Status of Statewide Technology Initiatives (continued)

Authorized Under Texas Education Code, Subchapter C, Chapter 14

Initiatives	Description	Purpose	Focus	Location	Hardware	Funding Level
TEXAS CENTER FOR EDUCATIONAL TECHNOLOGY (TCET) TEA Contact: Delia Duffy TCET Liaison	The Texas Center for Educational Technology (TCET) is a research center located at the University of North Texas in Denton and works in partnership with the University of Texas at Austin. Other universities participate in collaborative research activities.	The mission of the TCET is to promote research and development collaboration between industry and education in order that technologies and applications can be created and adapted for integration into the public school system.	Some of the direct benefits include free copies of selected materials such as TCET's annual report. This is a description of the Center's research and development activities over the past two years. Districts may purchase, at cost, over 40 technology-related products.	100% of districts and all twenty (20) regional education service centers are TCET members	A variety of TCET information can be accessed on TENET under News and Conferences (tenet.tcet). Much of the information such as the TCET catalog and research articles can be downloaded.	$500 K
ADVISORY COMMITTEE FOR TECHNOLOGY STANDARDS (ACTS) TEA Contact: Lane Scott Ed. Tech. Specialist	A 15-member committee appointed by the State Board of Education to examine standards for the use of technology in schools.	By legislative mandate, the ACTS committee was established to advise the SBOE on standards or guidelines for the quality, technical specifications, functions, security, and other features of hardware, software, courseware, training, and other technology-related products and services provided to school districts.	Standards are viewed as a national "target of quality" intended to ensure success while allowing and encouraging local initiatives. Each standard will be issued as a guideline for the first cycle to enable school districts time to review the proposed standards.	100% of districts receive ACTS publications and recommendations	Electronic collaboration via TENET is used by the ACTS committee. Standards and guidelines are available on TENET under tenet.tea. technology.standards	$6 K
TECHNOLOGY PREVIEW CENTERS Contact: Appropriate Regional Education Service Center	Technology preview centers are located at regional education service centers to include equipment, software, and courseware, and funded staff to provide inservice and technical assistance to districts on technology planning, products, services, and to demonstrate effective uses of technology.	Preview centers allow district personnel hands-on experience with exemplary instructional systems as well as hardware, software, courseware, and other services; as well as provide continual assistance to districts in planning for the effective use and integration of technology into their daily operations.	Preview centers serve as effective resources designed to increase the level of technology expertise in school districts. Preview center staff assist districts in implementation of district technology plans as well as *The Long-Range Plan for Technology.*	100% of districts receive services through preview centers located at the 20 regional education service centers	Networked and stand-alone computers, CD-ROM and laser-disc players, modems, LCD panels, telecommunications equipment, other related peripherals, instructional software, and emerging technologies.	$6 M

COMPLIANCE STATEMENT

TITLE VI, CIVIL RIGHTS ACT OF 1964; THE MODIFIED COURT ORDER, CIVIL ACTION 5281, FEDERAL DISTRICT COURT, EASTERN DISTRICT OF TEXAS, TYLER DIVISION

Reviews of local education agencies pertaining to compliance with Title VI Civil Rights Act of 1964 and with specific requirements of the Modified Court Order, Civil Action No. 5281, Federal District Court, Eastern District of Texas, Tyler Division are conducted periodically by staff representatives of the Texas Education Agency. These reviews cover at least the following policies and practices:

(1) acceptance policies on student transfers from other school districts;

(2) operation of school bus routes or runs on a nonsegregated basis;

(3) nondiscrimination in extracurricular activities and the use of school facilities;

(4) nondiscriminatory practices in the hiring, assigning, promoting, paying, demoting, reassigning, or dismissing of faculty and staff members who work with children;

(5) enrollment and assignment of students without discrimination on the basis of race, color, or national origin;

(6) nondiscriminatory practices relating to the use of a student's first language; and

(7) evidence of published procedures for hearing complaints and grievances.

In addition to conducting reviews, the Texas Education Agency staff representatives check complaints of discrimination made by a citizen or citizens residing in a school district where it is alleged discriminatory practices have occurred or are occurring.

Where a violation of Title VI of the Civil Rights Act is found, the findings are reported to the Office for Civil Rights, U.S. Department of Education.

If there is a direct violation of the Court Order in Civil Action No. 5281 that cannot be cleared through negotiation, the sanctions required by the Court Order are applied.

TITLE VII, CIVIL RIGHTS ACT OF 1964 AS AMENDED; EXECUTIVE ORDERS 11246 AND 11375; TITLE IX, EDUCATION AMENDMENTS; REHABILITATION ACT OF 1973 AS AMENDED; 1974 AMENDMENTS TO THE WAGE-HOUR LAW EXPANDING THE AGE DISCRIMINATION IN EMPLOYMENT ACT OF 1967; VIETNAM ERA VETERANS READJUSTMENT ASSISTANCE ACT OF 1972 AS AMENDED; AMERICAN DISABILITIES ACT OF 1990; AND THE CIVIL RIGHTS ACT OF 1991.

The Texas Education Agency shall comply fully with the nondiscrimination provisions of all federal and state laws and regulations by assuring that no person shall be excluded from consideration for recruitment, selection, appointment, training, promotion, retention, or any other personnel action, or be denied any benefits or participation in any educational programs or activities which it operates on the grounds of race, religion, color, national origin, sex, handicap, age, or veteran status or a disability requiring accommodation (except where age, sex, or handicap constitute a bona fide occupational qualification necessary to proper and efficient administration). The Texas Education Agency is an Equal Employment Opportunity/Affirmative Action employer.

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